



## Sunlight EQUUS: Veterinary Bone Assessment



### ***Challenges to the Racehorse's Skeletal System***

The skeletal system of the racehorse is subject to massive stress during his years of training and his career on the track. As a result, stress fractures and “bucked shins,” a physiological response to stress, often appear. These conditions can force highly trained racehorses off the track temporarily, while they heal, or even permanently. While it is known that training too hard or too fast can lead to injuries, it is difficult to identify which horses are at high risk for such problems.

### ***The Need for Skeletal Assessment***

According to a recent evaluation, the incidence of fractures among racehorses during training, when the vast majority of fractures occur, is approximately 1.0 fracture/100 horses/1 month.<sup>1</sup> In light of this figure, the assessment of injury risk of the individual horse is crucial in order to help veterinarians and racehorse trainers work towards preventing fractures and other injuries in racehorses. Information about the individual bone strength and injury risk of horses permits the design of training schedules and nutrition plans suited to each specific racehorse.

Currently, racehorses are not checked for bone strength at any point during their careers. This is as a result of the unfeasibility of most bone assessment methods in the racehorse environment, generally because they require complex non-portable equipment or the sedation of horses before measurement.

### ***EQUUS – Clinically Proven Bone Measurement***

Clinical studies have demonstrated the use of EQUUS, an ultrasound-based bone assessment device, among thoroughbred horses. Measurement with the device for horses has been demonstrated as precise, reproducible<sup>2 3</sup> and independent of the effects of soft tissue and hair on measurement.<sup>4 5</sup> EQUUS measurement results, expressed in Speed of Sound (SOS), reflect

both bone mineral density and mechanical properties of bone, including bone architecture and elasticity.<sup>3 6</sup> Bone quality, size, and shape are pertinent in determining the ability to withstand physical stress (that is, the injury risk) of the individual horse.<sup>7</sup> Therefore, EQUUS measurement results, which reflect these factors, are a relevant indicator in the prediction of bone response to physical stress and training in racehorses.<sup>6</sup> In a recent study, the device clearly demonstrated the ability to discriminate between healthy horses and injured horses, with subjects with lower measurement results compared to the age- and gender-matched mean showing significantly higher injury risk.<sup>8</sup>

EQUUS, designed for the racehorse population, is based on same Omnipath<sup>®</sup> technology<sup>9</sup> and proprietary software algorithms used by Sunlight in its bone assessment products for the human population. Sunlight's adult bone assessment device, Omnisense 7000S, is widely used around the world for the diagnosis of osteoporosis and the prediction of fractures.<sup>10 11</sup> Alongside the proven advantages of the Omnisense product family, EQUUS uses a unique equine reference database and a physical configuration designed for use with the equine population.

### ***EQUUS – Designed for the Racehorse***

An equine reference database, with gender-sorted SOS results obtained at the third metacarpal bone (at three different locations, medial, lateral and dorsal), was collected to enable comparison of bone measurement results of an individual horse with reference values. The data was collected from horses aged 2-5 years at three study centers. Significant differences were observed between the different age groups and the genders.<sup>8</sup>

EQUUS was developed especially for use in stables. Measurement with the device is non-invasive and radiation-free. Packaged in a convenient carrying case, the device can be set up simply and easily in the stable. The horse can be measured in a standing position without the need for tranquilization or prior shaving of the measurement sites.

Measurement results provide a comparison with the gender- and age-matched population, an injury risk estimation score, and a graphic presentation that illustrates changes in bone status over time for the individual horse.

## ***EQUS – The Ideal Method for Tracking Racehorse Bones***

Bone measurements with EQUS can help determine appropriate training schedules and nutrition plans for racehorses, and protect them from injuries caused by training too fast or too hard. As the only device of its type available, EQUS can result in considerable savings for racehorse owners, by preventing injuries and avoiding the necessity to destroy costly horses who have suffered devastating injuries.

## **References**

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