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Horse Hoof Trimming Guidelines

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One of the biggest troubles with discussing horse hoof trimming and balance is that when it comes to hoof balance, there isn't a set definition. This makes it challenging for everyone to achieve a balanced foot. At the 2009 American Association of Equine Practitioners Convention, held Dec. 5-9 in Las Vegas, Nev., one practitioner discussed guidelines for characterizing hoof balance and for trimming the foot to achieve proper function.

"The term 'hoof balance' has no meaning, but we all say it," said Stephen E. O'Grady, BVSc, MRCVS, of Northern Virginia Equine in Marshall, Va. "It's a concept that means something different to everyone. Hoof balance has been the term used by veterinarians and farriers to describe the theoretical ideal shape or conformation of a given foot, the position of the hoof relative to the limb above, and the way that the foot should be trimmed."

The term "hoof balance" has been used to refer to geometric balance (symmetry of hoof shape), dynamic balance (flat landing of the hoof on a hard surface), three-dimensional balance, and natural balance, said O'Grady. However, he said that no method of "balancing the foot" will yield optimum foot conformation for every variation of equine conformation, and that "balancing the foot" might yield very different foot shapes according to variations in equine conformation (such as toeing in or out, or a club foot).

He offered an alternative: "An option to the term hoof balance would be to use a set of biomechanical principles or landmarks as guidelines that could be applied to every horse and have a universal meaning," he said. "The foot can be evaluated, trimmed, and/or shod in a consistent, reproducible manner that considers:

- The hoof-pastern axis (HPA);
- The center of articulation;
- Heels extending to the base of the frog.

"These principles can be used by the clinician to evaluate every hoof and assess the type and suitability of farriery that is presently employed," he noted. "Additionally, they can serve as landmarks for trimming and shoeing."

"The *hoof-pastern axis* (HPA) is our first guideline when trimming the foot," said O'Grady. When you are looking at the horse's hoof from the side, the hoof-pastern axis describes the alignment of the toe of the hoof wall with the pastern above it. If they are parallel, the hoof has a proper hoof-pastern axis. However, the pastern might have a steeper (more vertical) angle than the hoof (a broken-back HPA) or vice versa (a broken-forward HPA).

This axis has implications for load distribution within the foot; a broken-back axis is often caused by excessive toe or minimal heel length and tends to result in excessive load on the rear of the foot. This can result in crushing of the digital cushion in the rear of the foot (if it isn't already crushed), and it increases load in the deep digital flexor tendon.

Conversely, the broken-forward axis (sometimes due to club foot) tends to overload the toe; underuse of the digital cushion in the rear of the foot means less shock absorption in the foot and more jarring of some structures. In addition to overloading different parts of the foot, an improper hoof-pastern axis also loads the joints of the lower limb at different angles than that for which they were designed, which can result in lameness.

O'Grady noted that the angle for a particular hoof is suitable when the hoof-pastern axis is straight, not when hoof angle approaches any ideal number.

The *center of articulation* is the center of rotation of the distal interphalangeal or coffin joint when viewed from the side. O'Grady said a vertical line drawn through it should approximate the middle or widest part of the foot

from front to back (when viewed from the bottom).

"The widest part of the foot (center of articulation) forms a landmark on the solar surface of the foot that not only can be used as a reference point when trimming, but can also be used in evaluation of foot conformation and the existing farriery that has been performed on the horse," he explained. "After the trim, the ground surface of the ideal foot or good foot will be basically as wide as it is long," and the length of the sole in front of and behind the widest part of the foot will approximate each other.

"The *third landmark* is the heels of the hoof capsule extending to the base of the frog," said O'Grady. This means the heels should not be long or underrun. The rearmost point of the heels' contact with the ground should be at the base of the frog, when possible.

"Often there is limited soft tissue mass in the palmar (rear of the) foot, or the hoof wall at the heels cannot be trimmed to the base of the frog; this necessitates that the branch of the shoe or some other form of farriery extends to the base of the frog," he added.

"Becoming familiar with three basic landmarks will enable the veterinarian and farrier to approach trimming the equine foot in an individual, standardized, and repeatable manner," he concluded. "Another advantage of these landmarks is the creation of a technical language that can be used to discuss farriery between the professions, and it will form the written basis for reports and records."

**Readers are cautioned to seek the advice of a qualified veterinarian
before proceeding with any diagnosis, treatment, or therapy.**



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