

## Barefoot Hoof Care May Improve Heel and Foot Health

Written by Toni Rizzo

Members of the hoof care industry within different schools of thought have recently been debating the merits of shod versus shoeless hoof care approaches. Debra R. Taylor, DVM, MS, Auburn University College of Veterinary Medicine, Auburn, Alabama, USA, presented the current evidence for the “barefoot” approach to hoof care.

Traditional metal shoes provide traction, protection and support, and enhanced biomechanics. They require no work for the rider and stay on better. In a horse with injury or weakness, shoes provide protection while healing and immediately make the foot more comfortable and functional. However, barefoot proponents are concerned that metal shoes can lead to more dysfunction or atrophy and that those adjacent tissues might be overworked or adversely affected. Most believe that confinement in softly bedded stalls is the main obstacle inhibiting hoof development.

Barefoot proponents are trying to achieve a structural change in the hoof to increase soundness, functionality, and foot “ableness.” According to Dr. Taylor, anecdotal reports support the concept that the foot can undergo internal structural change, but scientific evidence is lacking. This concept of “smart” tissues proposes that tissues react to stresses and strains by becoming stronger under an increased load. Most horses need foot protection while the foot is adapting and when working on unfamiliar terrain. Hoof care providers who focus on barefoot hoof development and rehabilitation do not leave horses barefoot unless they are comfortable. Most apply some type of nonmetal hoof protection, such as hoof boots, while horses adapt to going barefoot.

According to the smart tissue theory, the horse hoof responds to direct stimuli, such as trimming, shoeing, or padding, and to indirect stimuli, such as change of stress or strain on the tissue [Thomason JJ. In: Floyd AE, Mansmann RA, eds. *Equine Podiatry* 2004]. Sensory perception of the stimulus leads to cellular and tissue responses, resulting in comfort, reduced lameness, and anatomic change. These theories were supported in a study of 7 Arabian horses trimmed by the barefoot method every 6 weeks and followed for 16 months [Clayton HM et al. *Aust Vet J* 2011]. The heels were gradually lowered to allow the frog and bars to contact the ground, and the hoof wall was beveled. Minimal sole material was removed, leveling to the live sole plane and allowing the sole to develop a sickle-shaped callus. This treatment

resulted in palmar/plantar migration of the heels with increased support length of the heel from  $11.20 \pm 1.23$  cm to  $11.59 \pm 0.56$  cm, increased heel angle from  $35.65^\circ \pm 7.07^\circ$  to  $44.28^\circ \pm 5.07^\circ$ , and increased average solar plane angle of P3 from  $3.70^\circ \pm 2.29^\circ$  to  $7.38^\circ \pm 2.06^\circ$ .

The Clayton study supports the claim of barefoot proponents that heel health is essential for overall foot health. Dr. Taylor hypothesized that they may be right and that it is impossible to build long-term soundness in the hoof if all or part of the heel is missing. It may not be realistic to expect other tissues to compensate for the weak heel forever. Currently, most research dollars are spent on molecular studies of laminitis, with limited funding spent on biomechanics of shoeing and understanding normal foot function or physical therapy systems for hoof tissues.

## Dermatology Pearls: Mites, Follicular Cysts, and Diagnostic Techniques

Written by Toni Rizzo

James O. Noxon, DVM, Iowa State University, Ames, Iowa, USA, discussed the diagnosis and treatment of 2 dermatology conditions that occur in dogs and cats—mite infestations and interdigital follicular cysts. He also described techniques for performing skin biopsies and bacterial culture.

### DEMODEX DIAGNOSIS AND TREATMENT

Several species of *Demodex* occur on dogs and cats. The classical demodectic mange of dogs is caused by the follicular mite *Demodex canis*. The features, diagnosis, and treatment of conditions caused by *D. canis* and other *Demodex* species are described in Table 1.

### INTERDIGITAL FOLLICULAR CYSTS

Interdigital follicular cysts develop in traumatized hair follicles, causing swelling of the follicular ostia. The most common cause of follicular cysts is excessive weight on the feet and conformational changes. The affected follicles occur on the ventral surface of the feet in the palmar (most common) and plantar regions. Trauma causes the follicles to dilate and fill with keratinocytes. The follicles rupture and drain dorsally, most often between P4 and P5, releasing their contents into the surrounding dermis and provoking an inflammatory reaction.

Close examination of the ventral foot reveals lichenification and comedones, from which keratinaceous debris can be expressed. The presence of follicular cysts can be confirmed by skin biopsy and histopathologic