editorial@usdf.org

Are Your Bit and Noseband Hurting Your Horse?

Conclusion: New findings regarding equipment use in dressage competition

By Hilary Clayton, BVMS, PhD, Diplomate ACVSMR, MRCVS

In the June issue, I explained the findings related to the use of spurs and whips in a recently published research study ("Horse-Health Connection: Could Your Equipment Be Hurting Your Horse?") that I conducted along with FEI veterinarian Mette Uldahl. In the study, we recorded the types of spurs, whips, bits, and nosebands used on sport horses during competitions in Denmark. We looked for associations between types of equipment used and the presence of visible lesions on the horses' bodies.

(DIS)COMFORT ZONE? *Bits and nosebands can cause pain—but not always the ones you'd suspect*

In this article, I'll present our findings regarding bits and nosebands.

How the Study Was Conducted

A total of 3,143 randomly selected horse/rider combinations competing in Danish Equestrian Federation competitions in dressage, jumping, eventing, and endurance were examined immediately after competition by licensed technical delegates (TDs) who had been trained as data collectors for the study. For the part of the study that I'll describe in this article, the presence and types of bits and nosebands were recorded; noseband tightness was measured; and the presence of abrasions, blood, or both at the corners of the lips was noted. Statistical analyses determined the relationships among equestrian discipline, level of competition (levels 0-7 on the Danish competition scale), type and tightness of equipment, and the incidence of injuries.

Bits and Related Oral Lesions

The data collectors noted whether each horse was wearing a bit or a bitless bridle, and the type of bit used. Of the horses studied, 82 percent had snaffle bits, 9 percent wore double bridles (bridoon plus curb), 7 percent had pelham or kimberwick bits, and 2 percent were being shown in bitless bridles.

The inside of the horse's mouth can develop lesions on the tongue, on the palate (roof of the mouth), on the bars, or inside the cheeks. Lesions can also form on the skin or mucosa around the corners of the lips. Because our study was performed during a competition, the oral examination was limited to the skin and mucosa at the corners of the lips. It was not possible to perform a full intra-oral examination of the insides of the horses' mouths, and so lesions involving these structures were not evaluated or included in the results.

The TDs who participated in the study as data collectors inspected the corners of the horses' mouths on both sides. If the skin or mucosa of the lips was lacerated, with or without the presence of blood, it was recorded as an oral lesion. Across all sports, 9 percent of horses had oral lesions at the corners of the lips. The presence of lesions differed significantly among disciplines and was highest in dressage, with 10 percent of dressage horses and 16 percent of dressage ponies showing lesions at the corners of the lips. There was no difference in the incidence of injuries on the left versus right sides of the mouth; but if a lesion or blood was found on one side, there was a significantly increased risk of finding a lesion or blood on the opposite side, as well.

The presence of oral lesions increased with the level of competition but did not differ between bit types, including bitless bridles. Therefore, riding bitless does not protect against the development of lesions at the corners of the lips.

Nosebands

The presence or absence of a noseband was recorded and the type of noseband was noted. Two percent of the competitors studied used no noseband. Of those with nosebands, 51 percent used a cavesson with flash, 26 percent used a cavesson only, 4 percent used a cavesson with flash and jaw strap, 8 percent used a drop noseband, 6 percent used a crossed (Mexican or figure 8) noseband, and 5 percent used a Micklem bridle.

To facilitate the statistical analysis, noseband straps were classified as upper and lower. The upper straps included the cavesson and the upper strap of a crossed noseband or a Micklem bridle. The lower straps included drop nosebands, flash attachments, and the lower strap of a crossed noseband or Micklem bridle.

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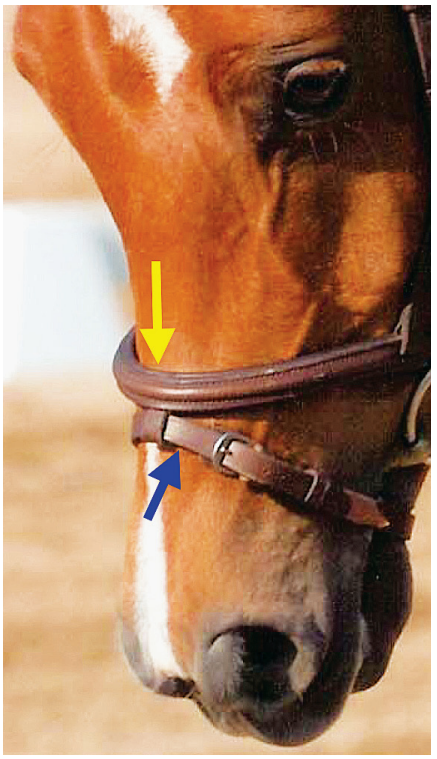

FIGURE 1. *Yellow arrow shows where tightness of the upper noseband was measured. Blue arrow shows where tightness of the lower noseband was measured.*

FIGURE 2. *Multi-tool being used to measure noseband tightness.*

Noseband tightness. A multi-tool was developed specifically for this study. The tool has a caliper on one end to measure spur length and a tapered probe on the other end that slides under the noseband and is marked at intervals. The markings on the probe can be converted to a linear measurement that indicates how much the noseband strap would need to be tightened in order for it to lie flat against the bridge of the horse's nose. Tightness was categorized as less than 2 cm, 2-3 cm, or greater than 3 cm.

Tightness of the upper noseband was measured by inserting the multi-tool beneath the noseband in the middle of the nose. Tightness of the lower

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noseband was measured at the side of the nasal bone (see Figures 1 and 2).

In total, 92 percent of the horses in our study wore an upper noseband. In 53 percent of these horses, the noseband had insufficient slack for it to be tightened by 2 cm. In 34 percent of horses there was room for the noseband to be tightened by 2 to 3 cm, and in 13 percent of horses it could be adjusted by more than 3 cm.

A lower noseband was present in 80 percent of horses. Tightness levels were: less than 2 cm, 43 percent; 2-3 cm, 42 percent; more than 3 cm, 16 percent.

Lesions Related to Noseband Use and Tightness

Interestingly, the incidence of lesions at the corners of the lips was higher without an upper noseband (14 percent) than with an upper noseband (9 percent). Compared with horses wearing a loose upper noseband, the incidence of lesions in horses without an upper noseband was 2.4 times higher. This was an unexpected finding and is likely related to the fact that, without a noseband, the horse can resist the rein aids by opening its jaw widely. With the jaw wide open, the cheeks and lips can be caught and abraded between the bit rings or bit cheeks and the premolar teeth. The rider, feeling a loss of control, is likely to tighten the reins and put greater pressure on the corners of the mouth, thereby causing the type of lesions observed in the study.

For horses wearing a noseband, lesions at the corners of the lips were related to tightness of the upper strap of the noseband (cavesson, crossed, or Micklem) but not to tightness of the lower noseband strap. When the upper-noseband tightness decreased by one category, the incidence of lesions at the corners of the lips decreased by about one-third. Neither the presence nor tightness of a lower noseband (flash, drop, crossed, or Micklem) influenced the incidence of lesions at the corners of the lips.

The positive association between lesions at the corners of the lips and upper-noseband tightness is likely the result of the tight noseband's squeezing the cheeks and lips against the premolar teeth. Superimposed on this, if the rider applies excessive rein tension or if the horse resists the action of the bit, the crushing effect at the corners of the lips may be exacerbated. A tight upper noseband is also likely to cause the inner surfaces of the cheeks to be abraded against the cheek teeth, but this could not be evaluated in our study due to the limitations of working in a competition environment. Because the lower noseband strap lies in front of both the corners of the lips and the cheek teeth, it would not be expected to cause mucosal abrasions.

The correlation between tightness of the upper noseband strap and pressure exerted under the noseband has not been measured, and little is known about how horses perceive noseband pressure. In order to function effectively as a training tool, the noseband needs to

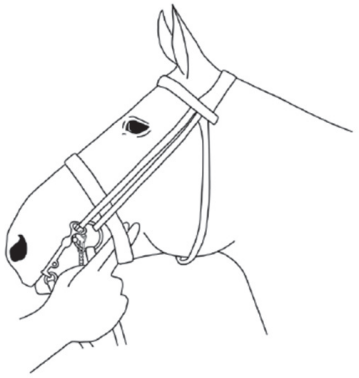

FIGURE 3. *Illustration from US Equestrian dressage rules showing where noseband tightness is checked manually in US national-level competition.*

have a little laxity so there is no pressure on the horse's face when the mouth remains closed. When the horse opens its mouth, the noseband tightens and puts pressure on the horse's face; when the mouth closes, the pressure is relieved immediately. This applies the principle of training through negative reinforcement. On the other hand, a very tight noseband mechanically prevents the horse from opening its mouth, but a tight noseband also exerts pressure continuously rather than acting as a training tool that teaches the horse to hold the bit quietly with only small movements of the jaws and tongue.

Under US Equestrian rules, noseband tightness is assessed on the side of the jaw, just behind the head piece of the noseband, which is a safer place to use your fingers to assess tightness (Figure 3). In other countries, including Denmark, noseband tightness is measured over the middle of the nasal bones by trained personnel (technical delegates) using a special measurement device. Note that you should not insert your fingers between the noseband and the nasal bones due to the risk of having your fingers crushed if the horse opens its mouth.

New Insights Challenge Conventional Wisdom

Conscientious dressage riders and trainers want their horses to feel and perform their best, free of pain or discomfort. There can be legitimate concerns about overly tight nosebands, and some dressage enthusiasts believe that bitless bridles are gentler and more humane than traditional bitted bridles. However, our findings indicate that such sweeping generalizations are not necessarily accurate.

Although dressage instruction places great emphasis on the development of an elastic contact and a "giving" hand, our study found that dressage horses and ponies showed a higher incidence of lesions at the corners of the lips than horses competing in other disciplines.

Likewise, though one might assume that horses and riders at higher competition levels are more skilled and able to communicate via light rein aids, especially using a double bridle, we found that mouth lesions were significantly more common at higher competition levels.

Also somewhat unexpectedly, the type of bit did not affect the incidence

of mouth lesions. In addition, the same percentage of mouth lesions was seen with bitless bridles as with traditional bits.

A tight upper-noseband strap was associated with a higher incidence of lesions at the corners of the lips, but tightness of the lower noseband strap did not have an effect.

Finally, some riders may believe that removing the noseband entirely makes the horse more comfortable, but our results showed that removing the noseband was not protective against the development of lesions at the corners of the mouth.

In order to safeguard the health and safety of horses during competition and training, it is necessary to understand the potentially damaging effects of the equipment used and to apply this information in the formulation of rules that protect horses from injury. The FEI blood rule eliminates a dressage horse if the judge at C sees fresh blood anywhere on its body, or if the steward finds blood in the mouth or in the area of the spurs in the post-ride equipment check. This study provides data that can guide trainers in choosing and adjusting equipment so that it is least likely to injure the horses or result in an infringement of the rules. ▲

Meet the Expert

Dr. Hilary Clayton is the professor and Mary Anne McPhail Dressage Chair emerita. She was the original holder of the Mary Anne McPhail Dressage Chair in Equine Sports Medicine at Michigan State University's College of Veterinary Medicine, East Lansing, from 1997 to 2014. At the same time, she was a professor in MSU's Department of Large Animal Clinical Sciences.

A world-renowned expert on equine biomechanics and conditioning, Dr. Clayton is president of Sport Horse Science, LC, which is dedicated to translating research data into practical advice for riders, trainers, and veterinarians through lectures, articles, and private consultations. A USDF gold, silver, and bronze medalist, she is a longtime *USDF Connection* contributing editor and a past member of the US Equestrian Federation's Dressage Committee.

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