

## Review of “The effect of exercise on equine gastric ulcer syndrome in the Thoroughbred and Standardbred athlete”

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### Why was this study done?

Equine gastric ulcer syndrome, or EGUS, refers to the stomach ulceration that is fairly common in Thoroughbred and Standardbred horses in race training. This study was conducted to document the prevalence of gastric ulcers in a group of racehorses and to examine the effect of continued training and racing on gastric ulcer prevalence. The report gives the following background information:

- Previous studies have shown that horses in race training have a higher prevalence of gastric ulceration (estimated at 66-90%) than pleasure, lesson, and show horses (estimated at 37%).
- Some factors believed to be associated with the development of EGUS are use of nonsteroidal anti-inflammatory drugs, physiologic stresses, feed management regimens, and the unique structure of the horse’s digestive system.
- Gastric ulceration is most common in the squamous portion of the stomach which is thought to be more susceptible to acid damage than the glandular section. The squamous portion lacks the layer of protective mucus present in the glandular section.
- Horses produce gastric acid continuously, predisposing them to acid irritation of the mucosa, especially when the stomach is empty. Saliva produced when horses are eating is a natural buffer of gastric acid.
- Horses that are turned out to pasture and those used for light work or pleasure riding have the lowest prevalence of gastric ulceration. Horses in training are commonly fed large grain meals and limited hay, a plan associated with a higher incidence of ulceration.
- High-speed exercise seems to have an effect on ulceration related to compression of the stomach as the horse gallops. Horses fed the same diet before and during periods of training also had higher gastrin levels during training. Gastrin is a hormone that stimulates secretion of gastric acid.
- Though infection with *Helicobacter pylori* bacteria is a common cause of human gastric ulcers, this strain of bacteria is not thought to be a risk factor in horses.

### How was the research conducted?

For the study, 79 Thoroughbred and Standardbred horses in race training were randomly selected and examined endoscopically for gastric ulcers. Color photos and video recordings were made of the inner stomach tissues of each horse, and these records were examined for signs of ulceration. A score was assigned to each horse on a scale where 0 indicated no ulcers and normal mucosa, 1 indicated mild lesions or tissue changes, 2 indicated

moderately severe lesions with ulceration, and 3 indicated severe and extensive ulceration with a large number of lesions. Bleeding ulcers were given a score of 2 or 3.

The horses were trained and raced in conventional ways under the supervision of licensed trainers. They were housed in stalls at several racetracks and training facilities.

Feeding and exercise schedules were set up by the individual trainers and were not controlled for the study. All horses were reported to be at the same level of training intensity, and all were scored as excellent body condition at the beginning of the study.

## **What results were found?**

At the first examination, 42% of the horses had a score of 0; 30% had a score of 1; 19% had a score of 2; and 9% had a score of 3. At this examination, the average ulcer score for all horses was 1.1. Males on average had slightly higher scores than females. Two-year-old horses on average had slightly lower scores (0.7) than older horses (1.4).

Of the initial group, 42 horses were lost to follow-up. The remaining 37 horses were examined endoscopically an additional one to four times over the next 48 months. Results of these follow-up examinations showed horses had ulcer scores of 0 to 3, with 63% of horses having a score of 2 or greater. Also, 12% of horses had severe ulcer disease (score of 3). Average ulcer scores were found to be significantly higher at follow-up examinations than at the initial examination for horses of both sexes and all age groups. In particular, males and 3-year-olds had significantly higher average scores following ongoing training and racing.

## **What does this research tell us about the effect of exercise on gastric ulcers in horses in race training?**

The results of this study indicate that, on average, ulceration increases according to the length of time horses are in race training. This can be seen from the number of horses showing the prevalence of grade 2 or 3 ulceration at the beginning of the study (28%) compared to 63% affected after ongoing training and racing. The finding is consistent with results of other studies that showed increased incidence of ulceration and worsening of ulceration grade as horses progressed through training and racing.

The authors state, "The specific cause of gastric ulcers in horses remains unknown. It has been suggested that strenuous exercise has a direct adverse effect on gastric physiology. It also has been suggested that feed type and eating behavior may be the most important contributing factor in the prevalence of gastric ulcers in training Thoroughbreds."

The report suggests that pasture turnout is the most natural management style to prevent and heal gastric ulcers, though this is not practical for most if not all racehorses in training. Keeping hay available to horses at all times is also helpful, as is the use of ulcer-healing medications.

The authors state, "The data reported in this study support the hypothesis that race training is related to a higher prevalence and severity of gastric ulcers in Thoroughbred and Standardbred athletes. The Thoroughbred and Standardbred racing athlete can be successfully managed to reduce and in most cases prevent the onset of equine gastric ulcer syndrome with the use of proprietary omeprazole."

*The full text of this article can be found in Journal of Equine Veterinary Science, Volume 29, Number 3 (2009), pages 167-171.*