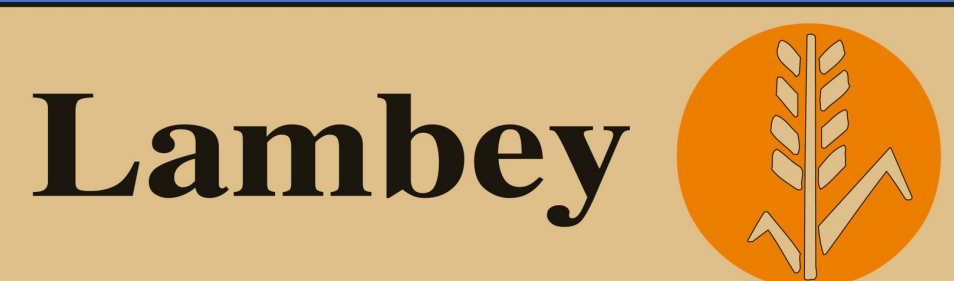


# Improvement of gastric ulcers and ridden horse pain ethogram scores with diet adaptation in sport horses

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## INTRODUCTION

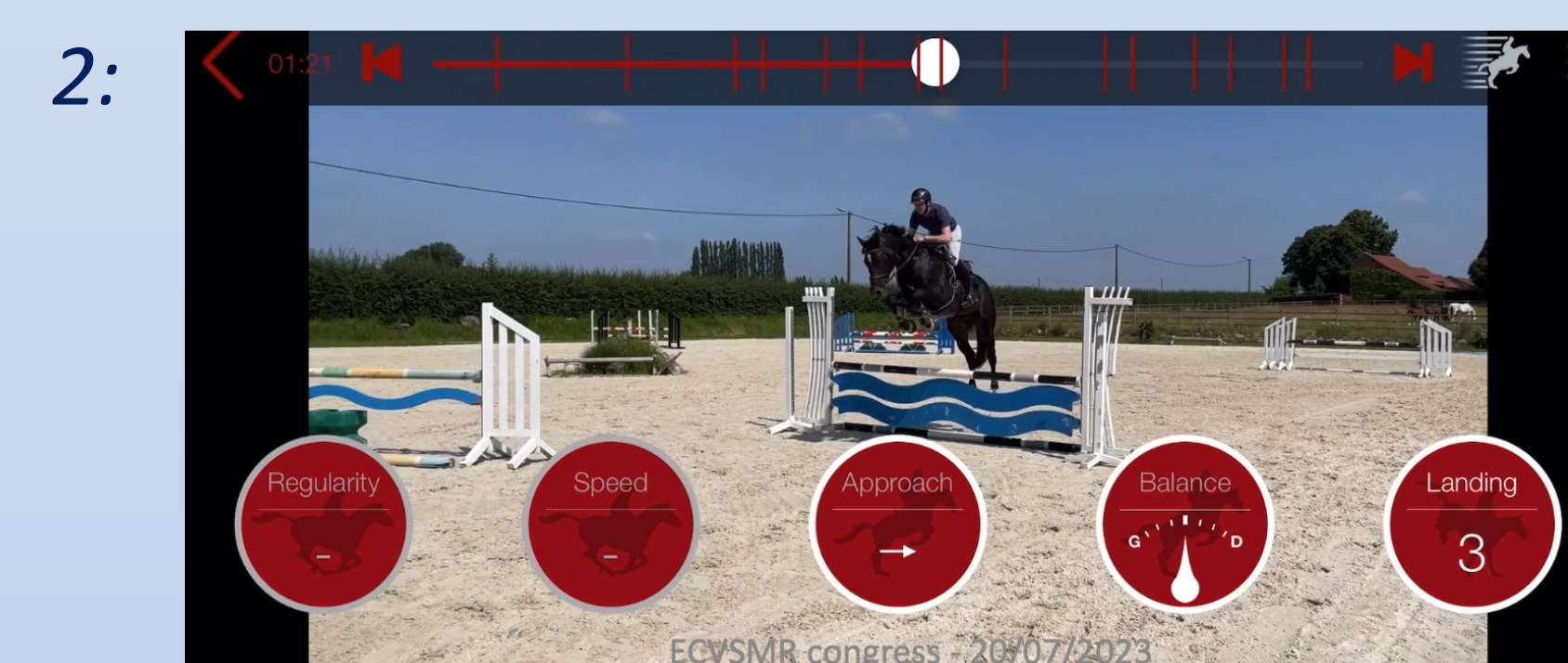
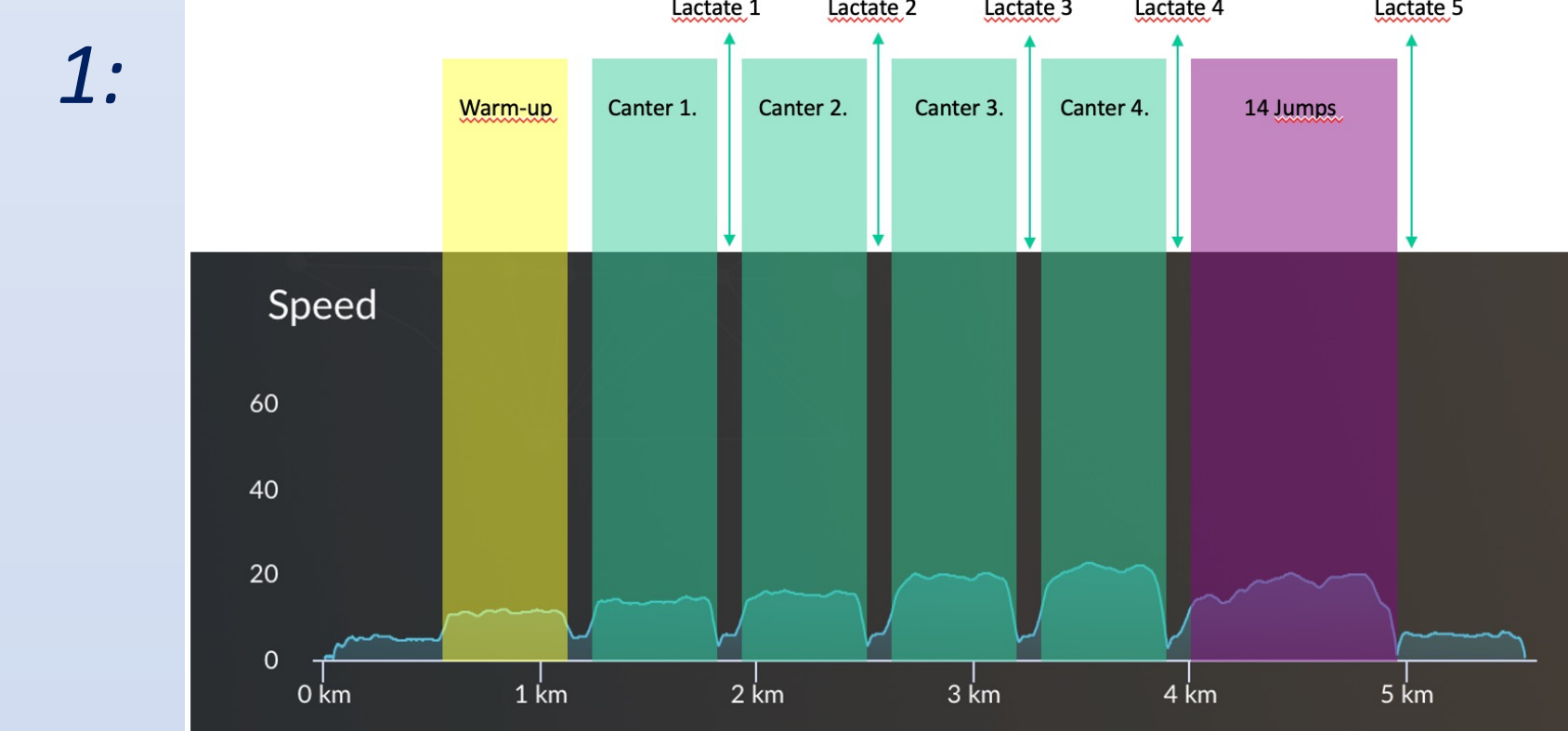
Gastric ulcers are highly prevalent in sport horses and may lead to poor performance, changes in behaviour and impact horse welfare. We wanted to assess whether dietary changes alone affect gastric health and pain ethogram scores in ridden horses.

## MATERIAL AND METHOD

Nine showjumpers training at the same stable and receiving a pelleted diet high in sugar and starch (>30%) were examined at T0. Their diet was then changed to a cooked, muesli-type low-starch (11%) diet for 12 weeks (T12), at which time the examinations were repeated.

At each examination, the horses underwent a filmed standardized exercise test (SET) with the same rider. A ridden pain score (RhpE, out of 24) was calculated by two blinded observers watching the videos. The day after the SET, horses underwent a gastroscopy.

Ulcers were blindly scored using a proprietary score (out of 11; 3 points for hyperkeratosis, 4 points for squamous ulcers and 4 points for glandular lesions). No antiulcer medication was administered, horses were housed on shavings and received free choice hay. Horses were checked monthly for lameness. Results were analysed with Wilcoxon and Spearman tests.



Legends:

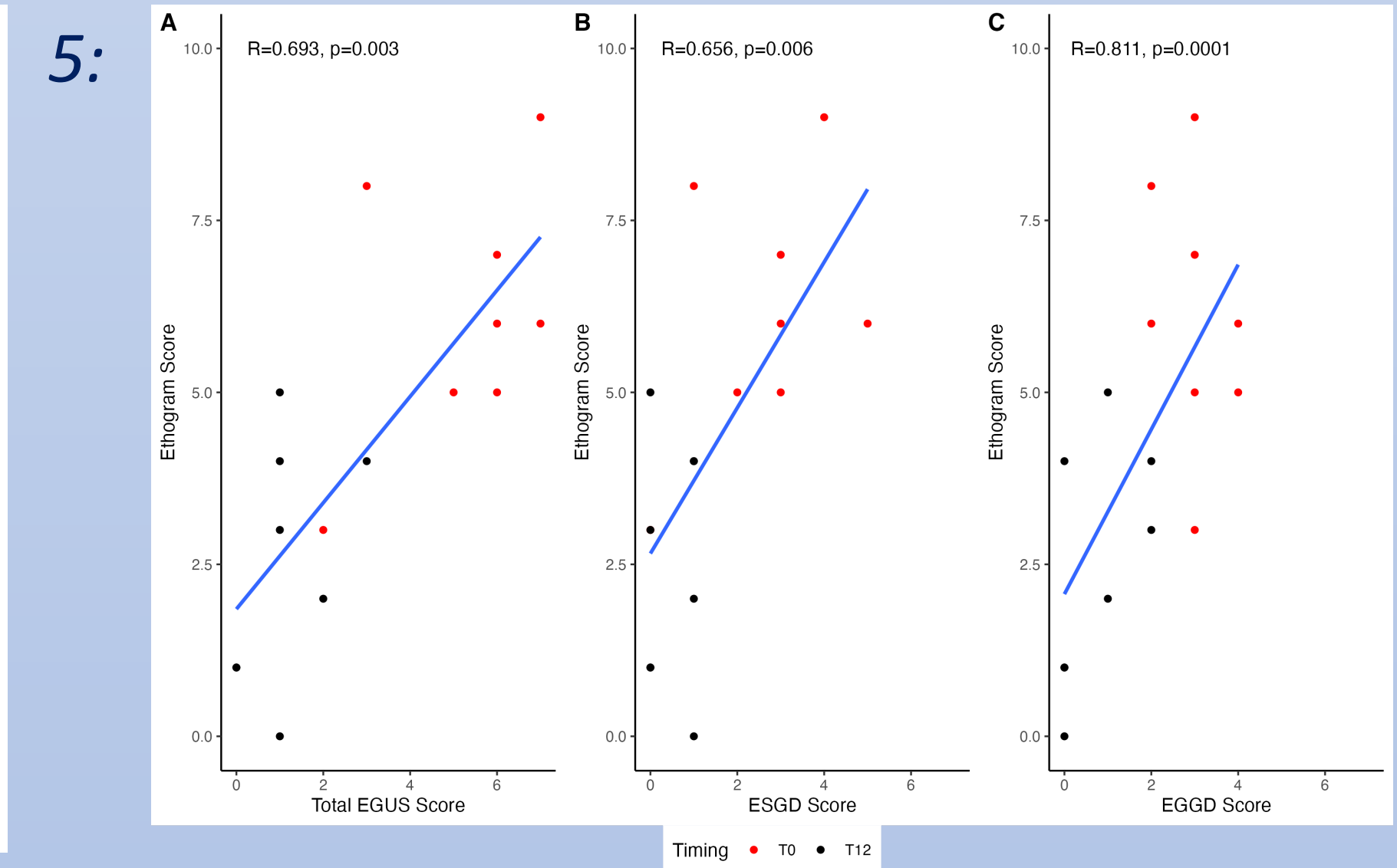
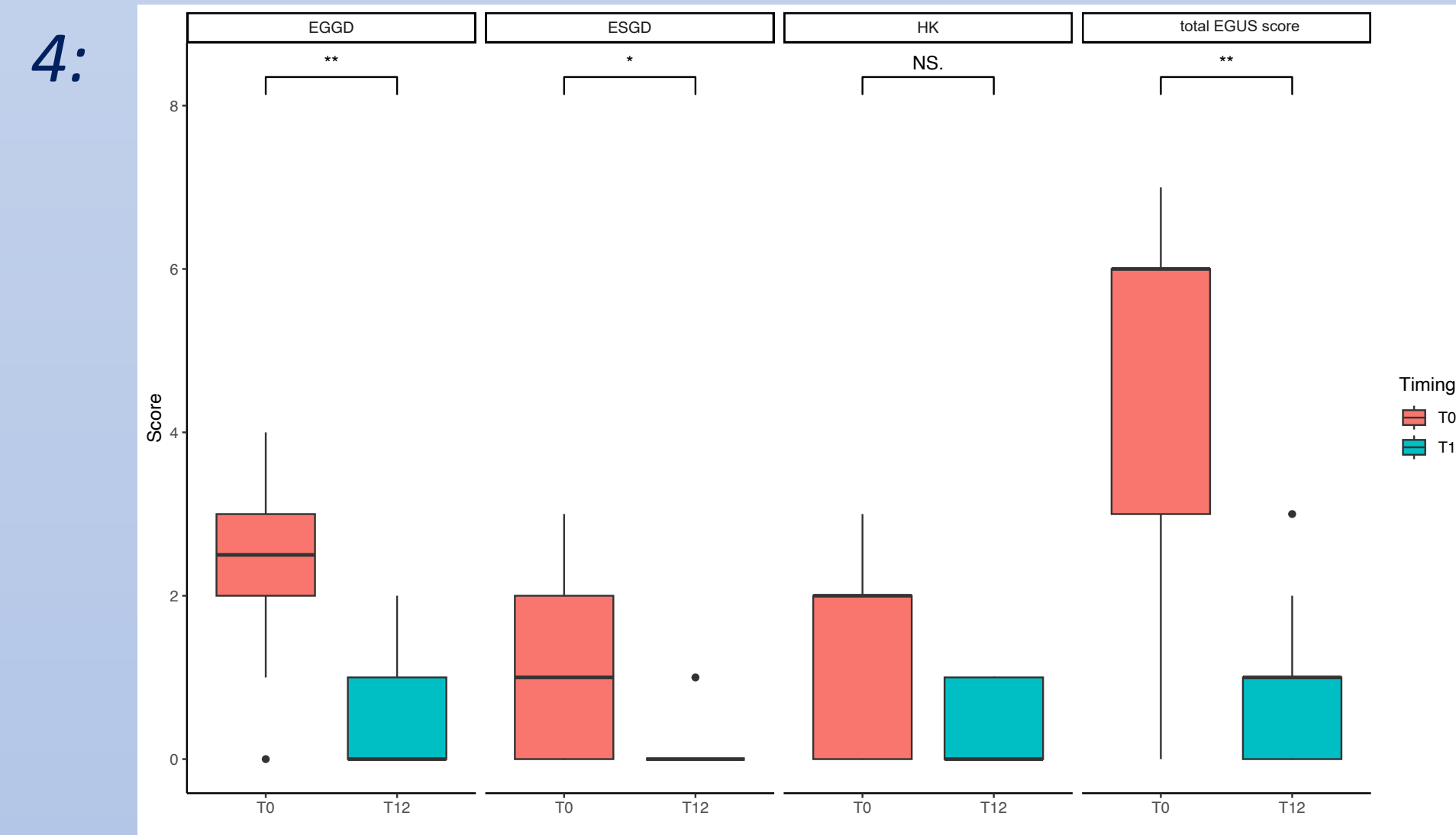
1: details of the modified standardized exercise test

2: screenshot of the app used for following the jumping part of the test

3: timeline of the study

4: Box-plot graph of mean scores for gastric lesions prior to (T0) and after 12 weeks (T12) of a change in diet for (A) Equine Glandular Gastric Disease EGGD, (B) Equine Squamous Gastric Disease ESGD, (C) hyperkeratosis HK and (D) total EGUS score. NS = p>0,05, \* = p<0,05 and \*\* = p<0,01.

5: Correlation between individual (A) Equine gastric ulcer syndrome (EGUS), (B) Equine squamous gastric disease ESGD, and (C) Equine glandular gastric disease EGGD scores and ridden pain ethogram scores.



## RESULTS

After 12 weeks of the low starch diet, there was a significant improvement of ulcer scores ( $4.6 \pm 2.5$  at T0 vs  $1.0 \pm 1.0$  at T12,  $P=0.006$ ) and of the RhpE scores ( $6.9 \pm 2.9$  at T0 vs  $2.9 \pm 2.0$  at T12,  $P=0.009$ ). Total ulcer scores and glandular disease scores were positively correlated with RhpE scores (respectively,  $r=0.693$ ,  $P=0.003$ , and  $r=0.811$ ,  $P=0.0001$ ). Heart rate and blood lactates measured during SET were not significantly different at T0 and T12.

## CONCLUSION

Dietary changes affect gastric health and subsequently the expression of pain in ridden competition horses, reducing pain ethogram scores.

These subtle changes could not be effectively assessed by the connected iJump saddle.

The RhpE proved to be a reliable means of demonstrating ulcer-related discomfort in horses as they performed their usual work, both on the flat and over obstacles.

This study showed that EGUS scores decreased with a low starch and sugar feed, indicating it is possible to induce gastric healing (especially EGGD) through dietary intervention alone.