

Havemeyer First International Workshop on Equine Pain Recognition and Monitoring



The Havemeyer First International Workshop on Equine Pain Recognition and Monitoring was held from August 26th to August 28th at the Grand Hotel Reykjavik in Reykjavik, Iceland. Internationally known experts and active researchers on pain recognition and assessment were invited to present and discuss.

The overall goal of pain recognition and monitoring is to identify animals in pain and to manage their pain as well as possible. This will ultimately lead to better welfare of a substantial number of horses, foals, donkeys, regardless of whether they are ridden, raced, worked or under veterinary treatment.

The main subjects dealt with and key take-always from each subject were:

Current pain scales including pain in foals:

There is a plethora of composite pain scales in horses and fewer in foals and donkeys. Regardless of the differences between scales they to a large extent actually do include the same types of behavior categories. Objective pain recognition in foals is a new but highly important area. Scales can be weighted and validated in a number of ways. A main issue is whether to include physiological parameters or not in the composite pain scales and how much time should be spent on pain scoring for each horse. All agree that the presence of humans disrupts discomfort behavior, hence the pain score becomes less reliable. Future focus should be striving after some sort of consensus pain scale, preferably under the Havemeyer name since this would probably encourage use and thereby improve the welfare for a larger number of horses globally. The discussion regarding presence of humans or not and how much time to spend per horse, will hopefully become arbitrary with the advent of cameras in all stalls and an increased focus of automation of pain recognition from recorded videos.

Automation of pain recognition - particularly with emphasis on facial cues of pain:

Pain is plastic and pain behavior is not static which is why observation of each horse for longer (as much as 30 minutes) than is typically recommended for pain scoring observations might provide better information on pain state. However, it is often impractical to spend so much time on pain scoring per horse, potentially several times per day. Although viewing 30 minutes of video in fast forward can be accomplished in less than 5 minutes, few equine hospitals are presently equipped to efficiently record and easily retrieve samples of continuous video of patients. Therefore, automated (AI, machine learning) analysis of behavior, facial expression action units etc. will have the potential to improve pain recognition tremendously and at a very low cost as measured in staff-hours spent observing horses. A big issue is how to differentiate behavior and expressions reflecting physical pain from reflecting general stress and anxiety or sedation. Future work should focus on combining efforts from subject 1 and 2 in order to allow faster development of automated monitoring technology and potentially even inclusion of these in apps like the Equine Pain and Welfare App.

Analgesic testing:

This is a smaller area needed for horses where an obvious distinction between pain and behavioral issues is also needed. In some horses it can be difficult to reach a conclusion after diagnostic analgesia and/or thorough clinical, medical investigations. These might go on to systemic analgesic testing. It became clear that meloxicam might not be a good drug for this (too low potency), and that it is important to recognize that a positive response (the elimination of the discomfort behavior) is a strong indicator of the behavior being related to pain. A negative result is inconclusive because a) not all musculoskeletal pain responds to non-steroidal anti-inflammatory analgesic drugs, b) a behavior may not be pain related, c) the analgesic was not sufficiently potent, d) the dose was not right, e) the time tested was insufficient etc. It was emphasized, that having caretakers keep a systematic diary of the behavior for 1 week prior to the testing, during the testing, and until 1 week after testing should be considered. For special cases, analgesic testing by the epidural administration of analgesic drugs in both ridden and stabled horses might be used in the future. The future might focus on studying

differences between different analgesic for analgesic testing in ridden horses and further development of the epidural analgesic testing.

Recognition of indicators of pain in ridden horses and behavioral assessment of horses:

The Ridden Horse pain Ethogram (RHpE) has been developed, refined and validated in a large number of horses of a variety of breeds and types. If a horse displays 8 or more out of 24 specified behaviors during ridden exercise, this is highly indicative that the horse has musculoskeletal pain. The elimination of adverse behaviors and reduction in RHpE scores after abolishing lameness with diagnostic anaesthesia is highly indicative that there is a causal relationship between pain and behaviour. High RHpE scores have been found to be related to poor performance during competition at different levels of both eventing and dressage. Preliminary work in Icelandic horses also shows promise although it remains to be determined whether any change in the frequency of trot steps will need adjustment for the definitions of rushed or slow gaits. It is suggested that a future term for better acceptability in the equestrian world might be the “Ridden Horse Welfare Checklist” and it could be used as a tool to monitor musculoskeletal health. Future efforts should be made on replicating results with other researchers, with objective lameness assessment and in other disciplines. Also modification for other breeds might be a future focus.

Nociceptive threshold testing in pain research:

Considerable work that has been done to develop technology for measuring nociceptive threshold and nociceptive withdrawal responses, primarily for testing of effectiveness of analgesic agents or as a physiology research tool. It was proposed that nociceptive withdrawal response or nociceptive threshold methods can also be used as a complementary quantitative diagnostic tool to assess clinical conditions of sensory dysfunction in horses.

Program

Friday Aug 26	7 pm - 9 pm Opening Social - Welcome Reception	
	Welcome to Iceland	Hrefna Sigurjónsdóttir
Saturday Aug 27	8.30 am - 9.30 am Breakout in small groups	
	9.30 am - 12 pm Presentation of grouped abstracts:	
	AI and machine learning methods in equine research	Hedvig Kjellström
	Developing and interrogating a horse behaviour and welfare image repository.	Adroaldo José Zanella
	Improving equine pain diagnosis by merging, mining, and weighting the behavioral items of two scales with the use of artificial intelligence	Pedro Henrique Esteves Trindade
	Monitoring Acute and Chronic Pain in Donkeys with the Equine Utrecht University Scales for Pain in Donkeys (EQUUS-DONKEY-COMPASS, EQUUS-DONKEY-FAP and DCPS)	Machteld C. van Dierendonck
	Pain assessment in neonatal foals experiencing acute pain and foals suffering from perinatal asphyxia syndrome (PAS)	Thijs van Loon
	12 pm - 1 pm Lunch Break	
	1 pm - 2 pm Breakout in small groups	
	2 pm - 4 pm Presentation of grouped abstracts:	
	The Horse Grimace Scale (HGS): past, present and future challenges	Emanuela Dalla Costa
	Facial expressions of stress in horses and relations to facial expressions of pain.	Pia Haubro Andersen
	Facial expressions of simultaneous presence of combinations of pain, stress and sedation in horses	Johan Lundblad

Proposed guidelines for validation of postoperative behavioral pain scales in horses and donkeys.

Stelio Pacca Loureiro
Luna

4 pm - 4.30 pm
Coffee break

4.30 pm - 5 pm
Breakout in small groups

5.00 pm - 6.30 pm
Presentation of grouped abstracts:

Cervical epidural and subarachnoid catheter placement in standing adult horses – A new technique for pain assessment and pain management

Klaus Hopster

Caudal Epidural Co-administration of Methadone and Morphine in Horses: An Evaluation of Analgesic Properties and Effects on Locomotor Function, Mentation, and Physical Examination Parameters.

Casper Lindegaard

Case series: diagnostic analgesia reduces lameness in clinically lame horses not responding to meloxicam treatment.

Pia Haubro Andersen

7.30 pm
Dinner at the Grand Hotel Rejkjavik

**Sunday
Aug 28**

8.30 am - 9.30 am

Breakout in small groups

9.30 am - 12 pm

Presentation of grouped abstracts:

Equine Discomfort Ethogram Catherine Torcivia

The relationship between Ridden Horse Pain Ethogram scores and the performance of sports horses Sue Dyson

Can we determine the presence of musculoskeletal pain in ridden horses by application of the Ridden Horse Ethogram? Sue Dyson

Application of a Ridden Horse Pain Ethogram in Icelandic Horses: a Pilot Study Helene Dragelund Garcia

A review of The Ridden Horse pain Ethogram and its potential to improve ridden horse welfare Jan Ladewig

When and how behavior-trained professionals can help diagnosing pain and treating painful horses Marion Desmarchelier

12 pm - 1 pm

Lunch Break

1 pm - 2 pm

Breakout in small groups

2 pm - 4 pm

Presentation of grouped abstracts:

The NWR model in equine pain research: past experience and recent updates Claudia Spadavecchia

Anti-Nerve Growth Factor therapeutic to treat chronic pain in horses affected by spontaneous osteoarthritis: a pilot study Claudia Spadavecchia

Nociceptive threshold testing in horses Polly M Taylor

Assessment of the Pain Trace device as a tool for pain detection in horses with orthopedic diseases Bernd Driessen

4.15 pm - 4.45 pm

Adjourn

6.30 pm

Dinner and Drinks in Town