

CONFERENCE PROCEEDINGS

21ST INTERNATIONAL EQUITATION SCIENCE CONFERENCE

11 – 13 AUGUST 2026, HOTEL LEGOLAND, BILLUND, DENMARK

JANNE WINTHER CHRISTENSEN, JENS MALMKVIST, JAN LADEWIG,
PAUL McGREEVY, CATHRYNNE HENSHALL

AARHUS
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Where evidence meets practice

International Society for Equitation Science

CONFERENCE THEME: THE NATURE OF HORSES

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PRESIDENT'S WELCOME TO ISES 2026

Welcome to the 21st International Society for Equitation Science Conference! I am absolutely delighted to welcome delegates, researchers, practitioners, and supporters to the beautiful town of Billund, Denmark. Gathering here in Denmark; a nation with a rich equestrian heritage and a modern focus on progressive animal welfare standards, is the perfect environment as we prepare to dive into this year's core conference theme: *"The Nature of Horses."*

This conference represents an extraordinary milestone for our global community, marking an incredible showcase that seamlessly blends cutting-edge equitation science research with direct, practical application. The sheer scale of engagement this year has been historic, with nearly 150 abstracts submitted for review from an exceptional mix of emerging, established, and young equitation scientists from all corners of the world. Each submission embodies a shared dedication to applying valid, quantitative scientific methods to measure, understand, and safeguard the welfare of horses in their partnerships with humans.

As we reflect on our journey, it is clear that the need for an objective, evidence-based understanding of the horse has never been more pressing. While public scrutiny regarding the social license to operate for equestrian sport and leisure continues to intensify globally, ISES remains uniquely positioned to act as a positive disruptor, using rigorous academic data to challenge outdated, traditional dogmas that compromise horse welfare, while celebrating and actively promoting training and management methods that elevate it.

For those of you joining us for the very first time: an especially warm welcome to our community. You are stepping into a uniquely collaborative, supportive, and open environment. One of the greatest historical strengths of ISES is our pride in bridging the gap between ivory-tower academic research and the real-world equestrian practitioner. You do not need to be a scientist to actively shape the dialogue here. To make everyone feel thoroughly at home, our proceedings include structured glossaries and practical statistics guides, and every scientific abstract is paired with an accessible Layperson Message to ensure that the data can be directly carried back to the stables and applied on the ground where it matters most.

I particularly want to emphasize that our doors are open to everyone who cares about the horse. True scientific progress requires a willingness to look at our practices critically, ask uncomfortable questions, and subject our ideas to replication and peer evaluation. Within an international forum like ours, healthy scientific critique of robustness is never a personal attack; rather, it is the primary mechanism through which we refine our tools and elevate industry standards to ensure horses experience a truly good life. To all of our first-time attendees, I want to express my deepest appreciation for your presence. I sincerely hope that you view this conference as an opportunity to find common ground, and engage in the constructive, reflective dialogue that defines our society. We are, after all, united by a singular, overarching purpose: the love and protection of these remarkable animals.

I want to extend my gratitude to our Senior Vice President, Katrina Merkies, and our Junior Vice President, Cath Henshall. Their instrumental counsel, shared commitment, and continuous guidance remain the cornerstones of our operations. My thanks also go out to the Local Organizing Committee in Denmark, whose dedication has put together what promises to be an unforgettable program. Finally, thank you to our plenary speakers, reviewers, student participants, and every delegate joining us both in Billund and online from across the globe.

Please make the absolute most of these next few days. Actively attend presentations, engage with the poster presenters, and spark those informal conversations between sessions. It is often within those very exchanges that the next great leap forward in equitation science begins.

Welcome to Billund, welcome to ISES 2026, and thank you for your unwavering commitment to scientific excellence and equine welfare.

Dr Kate Fenner
ISES Honorary President



International Society for Equitation Science

LOCAL ORGANISERS' WELCOME TO ISES 2026

A warm (hopefully) welcome back to Denmark for the 21st ISES conference. When Janne first mentioned hosting the 2014 conference in Denmark to Jan, he immediately replied "NO, we are not doing that!". About two years later, we had the pleasure of welcoming our colleagues to Denmark. It was a lot of work (as Jan had warned), a lot of learning - and a lot of fun! Perhaps some of you are even brave enough to return this year.

When the Icelandic LOC had to throw in the towel last summer, the 2026 conference was hanging by a thread. Jan was almost not difficult to convince this time. However, your LOC is now 12 years older and not nearly as energetic as the last time we hosted the ISES conference. This means that complaints have to be delivered in writing starting with: "I want to arrange the next ISES conference because [insert complaint]" and emailed directly to the ISES presidents. Praise, however, is very welcome and may be delivered with a glass of wine or chocolates at any time during the conference (preferably after breakfast).

This year's conference theme has been a hot topic for several years in Denmark as more horses are released in nature areas to help restore the ailing biodiversity. Once again, horses must come to our rescue! While roaming relatively freely has obvious welfare benefits for horses, e.g., in terms of access to unlimited social contact to other horses, free movement and varied and continuous foraging opportunities that many domestic horses can only dream of, concerns have been raised for their welfare during the winter as well as due to the lack of routine care and veterinary treatment. Regardless of the ethical discussions surrounding the extensively grazing horses, it is useful for equitation science to return to the biological roots of horses. To revisit what kind of biological beings horses really are and let this knowledge shape welfare discussions. We hope that this year's Clever Hans speaker will "inspire and provoke" as it is stated in the ISES conference guidelines and that you will all do your very best to contribute to an inspirational conference in a good and friendly atmosphere – and that you will be able to keep your focus on the horses, despite sitting next to Denmark's most famous amusement park.

Local Organising Committee

Janne Winther Christensen (chair)

Emma Bonde Stanek (conference secretary)

Frederikke Dall Malling (assistant secretary)

Jan Ladewig (reviewer)

Jens Malmkvist (program coordinator)

Eva Søndergaard (sponsoring)

ISES 2026 SCIENTIFIC COMMITTEE

Paul McGreevy (ISES Research Officer)

Cathrynne Henshall (ISES Junior President)

Local Scientific Committee

Jan Ladewig

Jens Malmkvist

Janne Winther Christensen

Abstract Reviewers

Amelia MacRae

Anita Maurstad

Angelo Telatin

Anna McVey

Anniek Eerdekens

Barbara Padalino

Carissa Wickens

Cathrynne Henshall

Claire Ricci-Bonot

Colleen Brady

Debbie Busby

Debra Fews

Elke Hartmann

Ellen Rankins

Gemma Pearson

Hannah Williams

Ina Draganova

Inga Wolframm

Jan Ladewig

Janne Winther Christensen

Jen Wathan

Jo Hockenhull

Johanna Henke-von Der Malsburg

Katarzyna Olczak

Kate Fenner

Kate Fletcher

Kathalijne Visser

Katherine Houpt

Katrina Merkies

Kris Hiney

Liane Preshaw

Linda Kjellberg

Loni Loftus

Paul McGreevy

Rachel Annan

Robin Foster

Rose Scofield

Ruth Herrmann

Sara Nyman

Sarah King

Stéphane Montavon

Sue Dyson

Tiago Serradas Viegas Mendonça

Uta König Von Borstel

PROGRAMME ISES 2026

Monday August 10th		
Time	**Event**	**Place**
19-21	Registration for conference open Presenters of the following days can upload Posters can be mounted Welcome snack and greet (pre-registration needed)	Reception Meeting room 1 Poster room Reception

Tuesday August 11th		
Time	**Event**	**Place**
08-09	Conference registration Presenters of today should upload their presentations Posters should be mounted	Reception Meeting room 1 Poster room
Theme 1: The nature of horses - and horses in nature Chair: Jan Ladewig & Jens Malmkvist		
09:00-09:15	**Welcome and opening of the conference** Local organisers & ISES president Kate Fenner	Meeting room 1
09:15-10:00	Clever Hans Presentation The nature of horses – and horses in nature *Jens-Christian Svenning*	
10:00-10:45	**Coffee/tea and snacks at the posters**	Hall & poster room
10:45-11:00	Seasonal variation in behavioural daytime budgets and social behaviour in groups of feral horses in nature restoration projects in Denmark *Janne Winther Christensen*	Meeting room 1
11:00-11:15	Everyday equine risk work in wolf territory: Routines, movement, and living with wolves *Jennifer Korterink*	
11:15-11:20	**Short Movement break**	

11:20-11:50	Plenary The Nature of horses: Applying the teleonome in equitation science *Cristina Luz Wilkins*	
11:50-12:05	Words matter: the prevalence and impact of negative emotive language in the equine industry *Susie Catherall-Ostler*	
12:05-12:20	Welfare washing: the (unexpected) turn of the social license debate? *Jo Hockenhull*	
12:30-13:30	**Lunch**	Restaurant
Theme 2: Housing, Management and Welfare Chair: Camie Heleski & Carissa Wickens		
13:30-13:45	Failure to meet natural sleep requirements: Long-term recumbency loss and atonic collapse in group-housed mares after relocation *Marianne Cockburn*	Meeting room 1
13:45-14:00	Dominance and compatibility as measures of group structure show no clear effect on lying behaviour in grouphoused horses *Michaela Schulz*	
14:00-14:15	Computer vision insights into 24-hour activities of stabled horses *Brad Hill*	
14:15-14:30	What makes horses move? How housing design, management, and environment shape locomotion *Miriam Baumgartner*	
14:30-14:45	Agency through design: Structural variation in turnout spaces supports context specific equine behaviour *Inga Wolframm*	
14:45-15:00	Body injuries, use-related pain and conflict behaviour during tacking in horses from different management systems *Essi Wallenius*	
15:00-15:30	**Coffee/tea and fruits**	Hall

	Chair: Uta König von Borstel & Caleigh Copelin	
15:30-15:45	Weaning age and management in foals - Results from a Finnish survey *Heli Suomala*	Meeting room 1
15:45-16:00	Early, abrupt weaning may challenge mare welfare *Aline Bouquet*	
16:00-16:15	Separation anxiety in horses *Claire Ricci-Bonot*	
16:15-16:45	Plenary The internal biodiversity of the horse – An update on parasitology *Martin Krarup Jensen*	
16:45-17:00	Summing up Day 1 Announcements from the organisers	
17:00-19:00	Free time Presenters of the following day should upload Possible to visit Legoland (registration needed)	
19:00-20:30	**Dinner**	Restaurant
20:30-21:30	**An evening at the posters** - poster presenters should stand by their poster Coffee/tea at posters	Poster room

Wednesday August 12th		
Time	**Event**	**Place**
09:00-09:15	Introduction day 2, Announcements from the organisers	Meeting room 1
Theme 2 (continued): Housing, Management and Welfare Chair: Elke Hartmann & Lisa Ashton		
09:15-09:45	Plenary Meeting the foraging needs of obese horses *Rasmus Bovbjerg Jensen*	
09:45-10:00	Do horses work for forage when feed is freely available? An exploratory study of contrafreeloading behaviour *Ella Bradshaw-Wiley*	

10:00-10:15	Exploring opportunities to enhance equine weight management within an equine welfare charity *Liane Preshaw*	
10:15-10:30	From yearling to racehorse: A two-year study of behavioural time-budgets in thoroughbreds *Fabienne Eichler*	
10:30-11:00	**Coffee/tea and snacks at posters**	Hall & poster room
Theme 3: Pain and Nociception Chair: Paul McGreevy & Frederikke Dall Malling		
11:00-11:15	Consensus report from the Havemeyer working group meetings on equine pain assessment *Machteld Van Dierendonck*	Meeting room 1
11:15-11:30	What if horses were humans? Comparing bit pressures to human pressure pain thresholds Frauke Musial	
11:30-11:45	Seeing the signs: Training equestrians to recognize equine pain *Debby Gudden*	
11:45-12:00	Behavioural differences between isolation- and nociception-induced discomfort in horses *Johan Lundblad*	
12:00-12:15	When back pain limits performance: Objective links between mechanical nociceptive thresholds and kinematics in horseball Thoroughbreds *Marc Beaussart*	
12:15-13:15	**Lunch**	Restaurant
Excursions		
13:30	**Busses depart** Remember outdoor clothes/shoes	Parking area in front of the reception
	Excursion 1: Konik stallions and the old grocery store Excursion 2: Harem group of Exmoor horses Excursion 3: Harem group of Konik horses Excursion 4: Icelandic horses at Haraldskær	

	Excursion 5: The equines of Givskud Zoo Excursion 6: The Viking Museum Excursion 7: Stengården: A different approach to horse keeping Alternative option: Visit Legoland on your own	
Approx 18	Busses return to the conference venue	
19 – 24	**Conference dinner**	Legoland: The castle

Thursday August 13th		
Time	**Event**	**Place**
09:00-09:15	Introduction day 3, Announcements from the organisers	Meeting room 1
Theme 4: Training and Equipment Chair: Orla Doherty & Megan Ross		
09:15–09:30	The COMPASS Guidelines: A new research standard for equitation science and beyond *Paul McGreevy*	
09:30-09:45	Relationship between equipment and oral and lower extremity lesions in Icelandic competition horses *Uta König von Borstel*	
09:45-10:00	Race preparation and equipment in standardbred trotters: Associations with conflict-related behaviour during warm-up and pre-race phases *Kathrin Kienapfel-Henseleit*	
10:00-10:15	Riders' perceptions of communication and control when riding with bits and sidepull bitless bridles *Susanne Lundesjö Kvart*	
10:15-10:45	**Coffee/tea and snacks at posters**	Hall/poster room

Theme 5: Learning and affective state Chair: Kate Fenner & Miriam Baumgartner		
10:45-11:00	What and how horses learn can shape how they feel: Prediction error learning and mood state in thoroughbreds *Cathrynne Henshall*	Meeting room 1
11:00-11:15	Do you see what I see? Unpacking human judgement to develop reliable AI tools for equine affective assessment and strengthen welfare standards in equestrian sports *Camie Heleski*	
11:15-11:30	Do horses learn to learn? Effects of training density on horses' acquisition of a negative reinforcement task *Johanna Henke-von Der Malsburg*	
11:30-11:45	The effect of pre-training on behavioral response to Novel Object Tests in young thoroughbreds *Lara Klitzing*	
11:45-11.55	**Short movement break**	
11:55-12:10	The stress response to different pretraining events does not differ between yearling and two-year-old thoroughbred fillies *Franziska Pilger*	
12:10-12:25	Inter- and intra- specific social facilitation in horses (Equus caballus) when approaching a stressor *Debora Cinganelli*	
12:25-12:40	Do horses feel different after therapeutic riding? A combined cognitive and physiological assessment *Kathalijne Visser*	
12:45-13:45	***Lunch***	Restaurant
Theme 6: Working equids and free papers Chair: Katrina Merkies & Cath Henshall		
13:45-14:00	Welfare assessment of working horses in Bishoftu (Ethiopia) and the attitudes and knowledge of their owners *Pantaleo Gemma*	Meeting room 1

14:00-14:15	Implementing a compassionate handling project to improve the welfare of working equines in Senegal *Mactar Seck*	
14:15-14:30	Measuring and improving human–animal interactions: Developing and validating the compassionate mentoring Framework for working equids *Jen Wathan*	
14:30-14:45	How harness racing trainers and drivers conceptualise driveability: Insights from qualitative interviews *Lina Nyberg*	
14:45-15:15	**Coffee/tea and snacks at posters**	Hall & poster room
15:15-15:30	Adaptive asymmetry in sport horses: A neuromechanical framework for interpreting lateralised locomotion *Renata Farinelli Siqueira*	Meeting room 1
15:30-15:45	Beyond management: Resolving equine stereotypic behaviours through memory reconsolidation *Sophie Côté*	
15:45-16:00	Are all scratches good scratches? How horses perceive scratching from owners vs strangers *Taru Niittynen*	
16:00-16:30	**Organisers: Summing up of the conference** **ISES president/research officer: Awards** **ISES2027 presentation** **ISES president: Closing of conference**	

INTRODUCTION TO PLENARY PRESENTATIONS

Clever Hans Lecture - Jens-Christian Svenning

To kick off the conference, Professor Jens-Christian Svenning, Aarhus University and Director of the Danish National Research Foundation Center for Ecological Dynamics in a Novel Biosphere (ECONOVO), will offer an exciting perspective on horses as one of the most widespread and ecologically flexible large herbivores. His work spans macroecology, rewilding, and the long-term dynamics between large herbivores and ecosystems. In the Clever Hans lecture, Svenning presents the horse as an evolutionary success and a re-emerging wild species with a role in future restoration. Drawing on both past and present, he explores how horses shape vegetation, drive ecological processes, and contribute to dynamic, biodiverse landscapes. Expect an engaging, evidence-based perspective on why horses matter, not only for humans, but for the functioning and future of nature.

Plenary presentation – Cristina Wilkins

Do current approaches to welfare assessment actually capture the nature of horses and what matters to them, from their own evolved perspectives? Cristina Wilkins, University of New England, Australia, argues that a shared biological foundation is needed to avoid measuring the wrong things, missing cumulative harm, and drawing conclusions that confuse performance and coping with welfare. In this plenary, she applies the *teleonome*, a unifying framework developed with colleagues, directly to equitation science. Wilkins demonstrates how refocusing on the horse's own adaptive logic fundamentally changes what we choose to measure and how, as well as what our findings actually mean for the animal.

Plenary presentation – Martin Krarup Nielsen

Professor Martin Krarup Nielsen specializes in equine parasitology and has produced a large research portfolio over the past 20 years. With a mission statement of "Providing solutions for equine parasite control" his research has contributed to improved parasite diagnostics, understanding mechanisms for drug resistance, determining health impact of parasites, understanding host/parasite interactions, and identifying sustainable strategies for parasite control. He has contributed substantially to several national and international guidelines for equine parasite control as well as diagnosing anthelmintic resistance and determining anthelmintic efficacy. In his plenary talk, "The internal biodiversity of the horse – an update on parasitology", Dr. Nielsen will provide a summary of the current state of equine parasitology research and highlight the many knowledge gaps and outstanding research questions.

Plenary presentation – Rasmus Bovbjerg Jensen

Rasmus Bovbjerg Jensen, Associate Professor at Aarhus University, has comprehensive research experience within energy and carbohydrate metabolism, forage quality, and the nutritional drivers of health and disease in horses. His talk, "Meeting the foraging needs of obese horses" explores how to balance horses' strong natural need to express foraging behaviour with the challenges of managing overweight horses. How can horse owners support natural foraging while managing weight and metabolic risks in domestic horses?

ABSTRACTS

Oral presentations

NOTE

Each research abstract ends with a short message for lay persons (**Lay Message**). The message is intended to briefly summarise the most important practical take-home message(s) from the presented study.

CLEVER HANS PRESENTATION

The nature of horses – and horses in nature

Jens-Christian Svenning

Department of Biology, Aarhus University, Aarhus, Denmark

Corresponding author - Jens-Christian Svenning: svenning@bio.au.dk

The horse (*Equus ferus*) is one of the most widespread and ecologically successful large herbivores of the Quaternary, with a deep evolutionary history spanning multiple continents and a remarkable ability to persist across diverse climates and habitats. From open grasslands to woodland mosaics, horses have long functioned as flexible grazers, capable of exploiting a wide range of vegetation types and contributing to dynamic, heterogeneous ecosystems. This ecological versatility has been a key to their evolutionary success and underpins their historical role in shaping landscapes.

Yet, the wild horse has undergone a dramatic decline and transformation under human influence, surviving today primarily through domestic, feral, and reintroduced populations. This raises a central question: what is the future of the horse as a free-living species?

In this talk, I explore the horse as both an evolutionary product and an ecological agent. Drawing on palaeoecology, modern ecological studies, and rewilding practice, I examine how horses influence vegetation structure, biodiversity, and ecosystem processes, often in ways that promote spatial heterogeneity and counteract vegetation homogenisation. At the same time, their impacts are context-dependent and embedded in complex socio-ecological settings.

I argue that horses should be seen not merely as domestic animals returned to the wild, but as a re-emerging wild species with the potential to continue its evolutionary trajectory. Integrating horses into rewilding and restoration efforts therefore offers a powerful opportunity—not only to restore lost ecological functions, but to re-establish a dynamic, free-living megafaunal component of future ecosystems.

Seasonal variation in behavioural daytime budgets and social behaviour in groups of feral horses in nature restoration projects in Denmark

Janne Winther Christensen, Margit Bak Jensen

Department of Animal and Veterinary Sciences, Aarhus University, Denmark.

Corresponding author - Janne Winther Christensen: jwc@anivet.au.dk

Horses and cattle are increasingly used for nature conservation projects due to their beneficial effects on biodiversity. This exploratory study aimed to investigate behavioural daytime budgets and social behaviour during late summer and winter in feral horses in nature restoration projects. The study included 10 groups of Exmoor ponies and Konik horses of varying group sizes (approx. 150 horses in total). During late summer and winter over two consecutive years, each group was observed on four days, with observations from 8:00 to 18:00 (late summer) and 9:00 to 17:00 (winter). Activity (e.g. foraging, resting, in locomotion), position (e.g., open pasture, forest) and distance between horses were recorded using scan sampling at 15-min intervals (instantaneous recording). Social behaviour, incl. affiliative and agonistic behaviour, was recorded using behaviour sampling (continuous recording) at group level during 24 10-min periods per observation day. Further, faecal samples were collected two days per group per season and analysed for Faecal Cortisol Metabolites (FCM), and the horses' body condition score (BCS) was estimated visually on a 1-5 scale (1: Very thin; 5: Obese). Overall daytime budgets were very similar to previous studies on feral horses: Foraging: 63%, Standing: 21%, Locomotion: 6%, Lying: 6%, Social interactions: 2%, Other activities: 2%. The horses showed more affiliative behaviour during late summer than during winter (Late summer: 0.75 ±0.04 vs. Winter: 0.40 ±0.04 interactions per horse/hour, $t=6.6$, $P<0.001$). BCS reduced slightly during winter (Late summer: 3.4 ±0.02 vs. Winter: 3.1 ±0,02, $t=8.3$, $P<0.001$), but there was no seasonal difference in FCM levels, based on 696 faecal samples. In conclusion, the horses showed less affiliative behaviour in the winter period, which may be due to the horses foraging with larger individual distances in the winter, or seasonal variation in social behaviour.

Lay Message Knowledge of natural horse behaviour is key to understanding the behavioural needs of domestic horses. This study included 10 groups of feral horses (approx. 150 in total) in nature restoration projects. Data were collected across 2 years. The horses spent approx. 63% of the day foraging and foraged on a wide variety of feed items, also when grass was abundant, which is likely an adaptive behaviour. To accommodate the behavioural needs of domestic horses, they should be provided with sufficient, and ideally varied, foraging opportunities throughout the day, access to free movement and social contact with other horses.

Everyday equine risk work in wolf territory: routines, movement, and living with wolves

Jennifer Korterink, Inga Wolframm

Sustainable Equestrianism, Van Hall Larenstein, University of Applied Sciences, Netherlands.

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Dutch conservation landscapes serve both as nature reserves as well as recreational spaces for equestrians. This area forms a managed mosaic of differently used and regulated spaces, structured through fences, trails, gates, signage, visitor centers, and monitoring practices. The return of the wolf has disrupted settled understandings of this landscape, generating uncertainty and sharpening conflicts over acceptable terms of coexistence. The aim of the study to investigate how wolf-related risk and uncertainty are created, experienced, and negotiated within equestrian contexts, and how this shapes horse management and welfare decisions. A multi-sited ethnographic design was used combining participatory methods with semi-structured interviews with different actors in equestrian contexts such as riders, stable owners, ecologists, nature guides and forest managers. Fieldnotes systematically document care practices, risk talk, and moments where practice and discourse diverge. Data were coded in ATLAS.ti using thematic analysis until data saturation was reached. Preliminary results identified five higher-order themes: routine risk work, embodied interpretation, infrastructural mediation, narrative risk talk and contested responsibility in coexistence. Together, these themes showed that wolf-related risk is managed differently across settings and carries different practical consequences in everyday life. In some contexts, the wolf remains part of the background of everyday uncertainty; in others, it prompts substantial adjustments in movement, supervision, and management of horses such as restricting night turnout or avoiding certain trails. The wolf can best be seen as a recurring reference point through which exposure, responsibility, and acceptable risk are assessed and negotiated. These differences generate competing and sometimes polarizing views on how land should be used, who is responsible, and which forms of human and nonhuman presence are considered acceptable. The study offers a grounded account of how these tensions are negotiated and managed in a densely regulated landscape.

Lay Message The return of the wolf is changing how horses are kept and managed in and around nature areas. Horse owners, yard managers and other actors in the equine field need to adapt fencing, turnout routines, riding routes, and take safety measures. At the same time they are dealing with new questions about responsibility, cost, and acceptable risk. This study examines how such practical decisions are made in everyday horse settings on the South Veluwe, Netherlands. It shows that coexistence involves changing infrastructure, care routines, and shared landscapes, including changes to night turnout, fencing, and riding routes.

PLENARY

The nature of horses: Applying the teleonome in equitation science

Cristina Luz Wilkins

School of Rural and Environmental Science, University of New England, Australia.

Corresponding author - Cristina Luz Wilkins: cwilki23@myune.edu.au

Equitation science has built a rigorous body of evidence about how horses learn, respond, and behave. Yet a persistent challenge remains in translating that evidence into welfare assessments and training practices that are anchored to what is biologically relevant to horses themselves, rather than to what is measurable or familiar to us. This challenge reflects a broader problem in animal welfare science: the fragmentation of findings across disciplines, and the gradual loss of the animal as an evolved, integrated, experiencing agent. The recently proposed teleonome – the integrated biological system through which animals detect, evaluate, forecast, and respond to what matters to them – offers a way to anchor that evidence to the horse's lived experience. Teleonomic reasoning moves beyond asking only whether a horse is distressed, compliant, or performing within normal parameters. It begins instead with what the horse is likely to perceive as a threat or opportunity, what their evolved physiology and behavioural repertoire equips them to do in response, and whether the environment affords or constrains those responses. For horses – animals shaped by selection for movement, social vigilance, and trickle foraging in open landscapes – the gap between what they are organised to do and what managed environments typically provide is often wide, and not always visible in the welfare measures we currently use. This plenary extends the teleonome into application across welfare assessment, training, research design, and husbandry — arguing that a shared biological reference point grounded in the horse's own goal-directed organisation could give equitation science greater coherence, predictive power, and confidence in its welfare claims. It invites participants to consider how teleonomic reasoning might reframe the questions they are already asking, and the studies they design.

Lay Message We know a great deal about what horses need — but we are less certain that our welfare assessments reflect what actually matters to them. A new biological framework, the teleonome, asks not only whether a horse appears to be coping, but what they are evolutionarily organised to care about and respond to — and whether the environments we provide support or frustrate that. When managed environments fall short, the costs are real but often invisible to conventional measures. This plenary explores what a horse-centred equitation science, grounded in that biological reality, might look like.

Words matter: The prevalence and impact of negative emotive language in the equine industry

Susie Catherall-Ostler[1], Andrew Catherall-Ostler[2], Anna Hollis[3], Gemma Pearson[4]

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Background: Evidence from both human and veterinary medicine suggests a link between how patients are described and their treatment, but the prevalence and consequences of negative emotive language (NEL) in the equine industry is unknown. Objectives: To quantify the prevalence of NEL, e.g. naughty, stubborn etc, and determine whether the language used to describe equine problematic behaviour affects human decision-making.

Methods: Online survey asking participants to self-report NEL use. Randomised paired vignettes which, unbeknownst to participants, described a horse's problematic behaviour either with neutral language or NEL. The associated video of the problematic behaviour was the same for both groups. Participants were then asked to propose a course of action

Results: All 355 participants had heard NEL being used to describe equine behaviour, and the vast majority (97%) admitted to using such language themselves. Whilst 'frustration' was the main reason given for using NEL, participants suggested the second most common reason for other people was 'in anger' but for themselves would be 'jokingly/affectionately'. The use of NEL in vignettes led to a significant increase in participants suggesting sedation ($z=3.6$, $p=0.0004$) and, in some scenarios, positive punishment. Those who self-reported using NEL more frequently were more likely to suggest using positive punishment to deal with undesirable behaviour ($z = 6.3$, $p < 0.0001$) and less likely to suggest giving the horse time, to consider the horse's emotional state and/or physical discomfort, or to attempt desensitisation (ANOVAs, respectively: $z = 3.3$, $p = 0.001$; $z = 2.7$, $p = 0.01$; $z = 2.1$, $p = 0.04$; $z = 2.2$, $p = 0.03$).

Conclusion: The language used to describe unwanted behaviours in horses affects the approaches that handlers propose. Use of NEL may therefore have a negative impact on the welfare of the horse and be detrimental to the horse-human relationship.

Lay Message When horses show undesirable behaviour, owners and clinicians must try to understand the underlying cause(s) rather than believing the horse is being 'naughty' or 'rude'. Here we survey the UK equine community and show that the use of such 'negative emotive language' to describe undesirable equine behaviour is very widespread. We then use a subtle language manipulation experiment to show that the use of such language predisposes people to adopt less horse-centred responses, when compared to a neutral description of the horse's behaviour. Our work suggests that productive human-horse relationships depend on human's choosing their words carefully.

Welfare washing: The (unexpected) turn of the social license debate?

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Scientists' concerns about equine welfare have become societal concerns, threatening the social license of horse sport and equestrianism more generally. The equestrian community is grappling with whether and how to update their practices, with a vast range of approaches resulting. Industries such as the meat industry have identified instances where public concerns are treated as a PR exercise rather than an opportunity to improve standards. This is referred to as "welfare washing", aligned with the idea of "green washing" in the sustainability sector. These approaches have the potential to undermine wider efforts to change, because social license depends on an industry's credibility. Changes made in equine organisations or institutions were evaluated in comparison with a literature review exploring the concept of welfare washing in other industries. All papers around "welfare washing" identified in the review related to the meat or zoo industries. A range of changes have been made across equestrianism, some of which create meaningful changes for horses; for example, redesigned management systems for racehorses which incorporate enriched environments and socialisation. However, some approaches aligned with welfare washing literature; these included some linguistic alterations ("whip" to "baton"), data manipulation to obscure the true nature of equine injuries in sport; and surface-level changes on yards. A framework was created in which a set of principles can be applied to help ascertain to what extent a change will genuinely alter equine wellbeing, by evaluating the potential impact of the change on three stakeholder groups: impact on the horse, impact on equestrians around the horse, and impact on the public. The proposed framework will help to distinguish superficial reforms from genuine improvements which make a meaningful difference to horses' lives. Addressing welfare concerns authentically is essential for the quality of life of horses, and for the long-term legitimacy of equestrianism.

Lay Message Concern about the welfare of horses in sport is increasing, threatening the industry's "social license" – the public acceptance that allows it to continue operating. Some organisations respond by making changes that appear to improve horse welfare but are mainly designed to improve public image. This practice, known as "welfare washing", is similar to "greenwashing" in environmental issues. We reviewed examples of welfare washing from other industries and compared them with recent changes in equestrianism. A framework was developed to identify whether proposed changes genuinely improve horses' wellbeing or simply create the appearance of doing so, thus supporting meaningful welfare improvements.

Failure to meet natural sleep requirements: Long-term recumbency loss and atonic collapse in group-housed mares after relocation

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Horses are able to rest while standing, yet rapid eye movement sleep requires complete muscle relaxation in recumbency. This biological necessity reflects the species' evolutionary balance between vigilance and recovery. When horses do not perceive their environment as comfortable and safe to lie down, chronic sleep restriction may develop and, in severe cases, result in atonic collapse. While individual cases have been described, large-scale developments within stable social groups have not previously been reported. We monitored 22 mares in 4 groups after relocation from an unstructured group housing to a paddock-trail group housing system that exceeded Swiss legal welfare standards. We recorded lying behaviour with limb mounted sensors continuously over 23 months, yielding 4179 days of data. Mean daily recumbency declined from 29 ± 55 minutes at initial monitoring at the new site to 15 ± 30 minutes in the final phase. After two years, only 22% of mares achieved at least 20 minutes of recumbency per day. Targeted management modifications, such as an alteration of feeding management towards ad libitum feeding, access to pasture or shelter modification (open-sided shelters, extended sand areas, or both), did not increase lying duration. In a different housing environment (partially single housing, partially unstructured group housing) however, the same horses averaged 126 ± 81 minutes per day in recumbency. During the prolonged period of reduced lying, several mares developed clinical signs related to atonic collapse. These findings document a sustained, group-wide reduction in recumbency following relocation, despite structural compliance with high welfare standards. The magnitude of apparent sleep deprivation observed across an entire group has not previously been described. The results demonstrate that regulatory standards alone do not guarantee fulfilment of the natural sleep requirements of horses. Objective monitoring of recumbency should therefore be integrated into welfare assessment of group housing systems.

Lay Message Horses must lie down to achieve "dream sleep" (REM-sleep). After moving to a new housing system, many mares almost stopped lying down, and many showed signs of collapses related to sleep deprivation. This occurred even though the stable exceeded legal welfare standards. The results show that good infrastructure is not sufficient if horses do not feel comfortable or secure enough to lie down. Monitoring lying behaviour can help identify serious welfare risks early.

Dominance and compatibility as measures of group structure show no clear effect on lying behaviour in group-housed horses

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When horses are housed in groups, these groups are often built based on human convenience rather than horse-specific social compatibility. The resulting social dynamics could influence the occurrence of species-typical behaviours to fulfil ethological needs, e.g. lying behaviour specifically in subordinate horses. Therefore, we assessed whether group structure relates to lying behaviour in group-housed horses. The sample included 112 horses of 22 groups. Horses were observed on two consecutive days using scan sampling to determine each horse's nearest neighbour every 5 min. Agonistic behaviour was recorded continuously. During the observation days and in the night in between, horses wore loggers that measured acceleration (1 Hz), from which we extracted total lying duration and number of lying bouts per 24 h. The variables regarding agonistic behaviour and nearest neighbour were summarized by a principal component analysis. The first two principal components (PCs) explained 57% of the variance. Based on their factor loadings these PCs were named "dominance" and "compatibility". In two linear mixed effects models, we then assessed the influence of these PCs on total lying duration and number of lying bouts. Group was considered as a random effect. Increasing dominance ($F_{1,88}=1.02$, $b=4.91$, 95% CI [-4.77,14.58], $p=0.32$) and decreasing compatibility ($F_{1,88}=1.10$, $b=-6.58$ [-19.05,5.88], $p=0.30$) correlated with increasing total lying duration; however, this could not be statistically supported. We could not find relationships between dominance ($F_{1,88}=0.80$, $b=0.14$ [-0.17,0.44], $p=0.37$) nor compatibility ($F_{1,88}=0.14$, $b=0.07$ [-0.29,0.43], $p=0.71$) with number of lying bouts that could be statistically supported. These findings suggest that social dynamics may influence lying behaviour, though this effect was not clearly evident under the observed conditions. Given the shared leadership typical of horse groups, no single social role appears to consistently affect recumbent resting. After social stabilization, agonistic interactions remained part of normal group maintenance without clearly altering lying behaviour.

Lay Message When horses are kept in groups, these groups are usually formed for human convenience rather than horses' social preferences. We studied 112 horses in 22 groups to see if social factors like dominance or compatibility affected how much and how often they lie down. We found no clear link between dominance or compatibility and lying. Even low-ranking horses had normal rest, suggesting that after groups settle, social interactions do not prevent horses from performing natural resting behaviour.

Computer vision insights into 24-hour activities of stabled horses

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Background: Many of the horse's key activities (such as main eating and sleeping times) occur at nighttime or when they are not observed. Computer vision is a type of Artificial Intelligence which analyses and interprets images or video footage. Objectives: To use computer vision monitoring to track 24-hour activities in a large horse population and monitor health and wellbeing. Methods: A computer vision system (EquiConnect) was implemented in a large population of horses. Individual cameras were placed into 90 stables. A computer vision system and algorithms which tracked 24-hour time budgets were deployed. The amount of time spent in eating behaviours, lying sternal or lying lateral, standing (not eating), activity levels, and alerts for behavioural signs of colic were tracked for each horse. Data could be reviewed for 12hour, 24hour, 7-day and 30-day time blocks, enabling comparisons between horses and over time. The onsite veterinary team maintained clinical records for all horses and reported any significant health events or interventions. A mixed effects model was utilised to model associations between interventions and lying times with significance at $p<0.05$. Results: Monitoring sleep patterns identified several horses which did not lie down for more than 30 minutes per day and/or had episodes of collapse. The system allowed management changes to be implemented and trialled to identify the optimal environment for individual horses. Strangles vaccination significantly reduced lying times by 144min/d (95% CI 114-174min/d, $p<0.001$), with the maximum impact on days 2-4 post vaccination. Similar, but less marked effects were seen with influenza vaccination. Conclusions: 24-hour computer vision monitoring provided new insights into equine health and behaviour. This included recognising causes of abnormal resting patterns and developing management plans tailored to individual horses.

Lay Message Using computer vision, we monitored horses in their stables over a 24hr period to better understand how they eat, rest and behave when people are not watching. Cameras recorded each horse's daily routine, including how long they spent eating, standing or lying down. This helped us identify horses with abnormal sleep patterns, including those that rarely lay down or even collapsed. The system also showed that some vaccinations temporarily reduced the time horses spent lying down. By tracking these behaviours, we were able to identify health concerns earlier and adjust stable management to better support each horse's welfare needs.

What makes horses move? How housing design, management, and environment shape locomotion

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Domestic horses retain locomotor traits shaped by evolution in free-ranging environments, yet conventional husbandry often constrains voluntary movement and species-typical behaviour. This study quantified changes in locomotion following rehousing in a paddock trail system designed to emulate key ecological features of wild horse ranging by separating essential resources. Twenty mares, previously kept in standard group stables (four groups of five; ~210 m^2/horse; resources within ~20 m), were transferred with unchanged group composition to four identical paddock trails (~440 m^2/horse) where forage, water, and shelter were separated by up to 150 m. Horses were monitored using GPS collars over 14 months, yielding 77 ± 32 full days of data collection per horse. Daily distance was analysed using linear mixed-effects models with horse-level repeated measures; shoeing and temperature–humidity index were retained as key predictors, while housing effects were assessed descriptively only due to the unbalanced design. Under standard housing, horses travelled 2.14 ± 1.12 km/day. In the trail system, mean daily distance increased to 5.43 ± 2.31 km, more than doubling locomotion despite high variability. Shod horses travelled farther than unshod horses ($P < 0.001$). Locomotion increased with temperature–humidity index but was not associated with age, dominance rank, or health history. Movement varied seasonally and with site conditions, decreasing during cold or muddy periods and increasing under warmer conditions and pasture availability. Heat maps identified hay racks as central activity hubs, while indications of disturbed lying behaviour suggest potential trade-offs in rest quality. Overall, paddock trail systems increased daily locomotion and may represent a welfare-oriented alternative to standard group housing, provided surface conditions and hoof management support comfortable movement.

Lay Message Horses naturally need to move, yet conventional housing often restricts this behaviour. After relocation to a paddock trail system with spatially separated resources, horses more than doubled their daily walking distance. Beyond housing design, movement was also shaped by management and environmental conditions: shod horses travelled further, and activity increased with warmer temperatures. These results highlight that both infrastructure and external conditions jointly determine locomotion. At the same time, appropriate ground conditions and sound hoof care are critical to avoid limiting or compromising movement. Properly managed, paddock trail systems can therefore enhance welfare by promoting more natural levels of activity.

Agency through design: Structural variation in turnout spaces supports context specific equine behaviour

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Equine turnout areas are commonly designed to maximise open space. However, research in more naturalistic settings suggests that horses use landscape features selectively. This study examined how horses' spatial use patterns vary across turnout designs with differing structural complexity, and whether terrain use differs according to behavioural state and time of day. Horses at four Dutch yards (A–D) differing in turnout design and size (6,477–37,489 m^2; A:3 mares, 2 geldings, 13.5y; B:7 mares, 5 geldings, 15.5y; C:4 mares, 11.5y; D:5 mares, 17y) were monitored for 10 days using Hoofstep® GPS–IMU sensors. Behaviour was automatically classified into four categories (Eating, Resting, Active, Highly Active) using an AI-algorithm based on a validated ethogram. Data were analysed in ArcGIS, comprising 3856.50 hours of monitoring. Observations were aggregated by horse × behaviour × terrain feature × time of day. Feature selection relative to availability was quantified using Manly Selection Ratios (MSR). Log-transformed MSR values were analysed using yard-specific linear mixed models with behaviour, terrain feature, and time of day as fixed effects and horse as random intercept. Terrain features significantly influenced spatial selection across yards (A: $F(12,940)=98.199$, $p<.001$; B: $F(7,1460)=124.663$, $p<.001$; C: $F(4,273)=19.326$, $p<.001$; D: $F(6,498)=38.691$, $p<.001$). Behaviour × feature interactions were also significant in all models (A: $F(36,940)=4.502$, $p<.001$; B: $F(21,1460)=2.710$, $p<.001$; C: $F(12,273)=4.090$, $p<.001$; D: $F(18,498)=2.504$, $p<.001$), indicating behaviour-specific spatial selection. Yard A showed negligible residual between-horse variation (ICC=0.000), compared with Yard B (ICC=0.085), Yard C (ICC=0.026), and Yard D (ICC=0.020).Open landscape appears to function as a spatial matrix, with additional terrain features being used selectively depending on behavioural state. Structurally richer environments produced more behaviour-specific spatial organisation. In the most heterogeneous yard, individual differences in landscape use were largely absent after accounting for behavioural context. This suggests that structurally differentiated environments may provide functionally meaningful opportunities that are used consistently across horses.

Lay Message Providing open space for turnout is essential for horse welfare, but space alone is not enough. Our findings show that horses use different parts of their environment for different activities, such as resting, eating, or moving, and that this pattern becomes stronger when fields contain varied terrain features. Elements such as forage stations, trees, shelter areas, or sand patches allow horses to organise their behaviour across the landscape. Turnout areas therefore function as living environments that should include a variety of features to give horses meaningful choices in how they use their space and to support natural behaviour.

Body injuries, use-related pain and conflict behaviour during tacking in horses from different management systems

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Management systems influence equine welfare and may affect the risk of external body injuries, including hairless patches, wounds and swellings. It remains unclear whether such injuries influence horses' conflict behaviour during tacking or whether these behaviours are primarily associated with use-related pain (mouth injuries or back pain). This study investigated (1) whether the prevalence of body injuries in horses differ across management systems, and (2) whether body injuries and use-related pain are associated with conflict behaviour during tacking. A field-based welfare assessment was conducted in 184 horses over 2 years of age across 22 Finnish stables. Management systems were categorized according to housing type, including opportunity for social interaction, and use (riding vs trotting). Body injuries were classified as mild or severe. Behaviour during tacking was recorded in 51 horses and categorized as conflict behaviour present or absent (e.g. ear pinning, tail swishing, attempts to bite). Of these, 44 horses underwent oral inspection and back pain evaluation and were assigned a use-related pain score (0, 1, or 2). Associations were analysed using Fisher's exact tests. Severe body injuries differed across management systems ($p = 0.002$), with the highest prevalence in individually housed trotters (45.5%) and the lowest in group-housed riding horses (4.9%). Body injuries were not associated with conflict behaviour ($n = 51$, $p=0.7$ for severe and 0.56 for mild injuries). In contrast, use-related pain score was associated with conflict behaviour ($n = 44$, $p = 0.049$): conflict occurred in 47.1% of horses with no pain indicators, 71.4% with one, and 100% with two or more indicators. While body injuries and use-related pain may reflect different dimensions of welfare, both are relevant when evaluating the welfare of horses. Management practices appear to influence injury risk but not behavioural responses during tacking, which were more closely associated with use-related pain.

Lay Message Horses kept in different management systems showed differences in severe body injuries, with the highest prevalence in individually housed trotters. However, these injuries were not associated with conflict behaviours during tacking. Instead, conflict behaviours were more common in horses showing signs of use-related injuries including mouth injuries or back pain. This suggests that while management influences injury risk, behavioural reactions during preparation for riding or driving may more often reflect discomfort arising from work itself. Both body injuries and use-related pain are important welfare concerns and should be considered when evaluating the overall well-being of horses.

Weaning age and management in foals - Results from a Finnish survey

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There is limited information available on foal weaning and associated management practices in Finland. On 1 January 2026, new national equine welfare legislation entered into force, stipulating that foals may not be weaned before six months of age and that the weaning process must be conducted gradually. The aim of this study was to examine current management and weaning practices for foals born in 2025 in Finland and to determine whether changes are needed to comply with current legislation. An anonymous online survey was conducted among stable and foal owners, with a single form covering all foals at each premises. Kruskal-Wallis tests (with Bonferroni-adjusted pairwise comparison), and Chi-Square tests were used to examine association between categorical variables. Significance was set at $p<0.05$. A total of 285 responses were received. Of the respondents, 44% kept their foals in loose housing, 32% in individual stalls, 12% in group stalls and 9% in multiple housing types. Weaning age ranged between 2-15 months (mean=6.9, SD=1.6). Among foals already weaned at the time of the survey (n = 444), 26 (5.9%) were weaned before reaching six months of age. In 77% of the stables, foals were weaned gradually, while 13% used abrupt weaning, 3% natural weaning, and 7% other methods. Foal breed did not significantly affect weaning age or weaning method, and housing type was not associated with weaning age or weaning method ($p>0.05$). Mean ± se weaning age for foals intended for trotting was slightly younger than for those intended for riding horses (6.5 ± 0.1 months vs. 7.1 ± 0.2 months, $p=0.02$). Among Standardbred foals, single stall housing was more common than loose housing (53.5% vs. 27.9%, $p<0.001$). The findings suggest that substantial variation exists in housing and weaning practices, and some stables may need to adjust previous routines to comply with the legislation. This study examined how foals born in 2025 were housed and weaned in Finland, based on 285 online survey responses. Most foals (77%) were weaned gradually, while 13% were weaned abruptly, 3% naturally, and 7% using other methods. Foals were usually weaned at six to seven months, close to the new legal minimum of six months, although some were weaned earlier. Foals bred for trotting were weaned slightly earlier than those bred for riding. As new horse welfare regulations came into force on 1 January 2026, some stables may need to review and adjust their practices to meet legal requirements.

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Early, abrupt weaning may challenge mare welfare

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Under human management, mares can experience multiple early, abrupt weanings throughout their reproductive lives. The consequences for mare welfare are poorly understood and may potentially be influenced by the degree of mare-foal attachment. Here, we tested whether: 1) mare life history (parity, number of previous foals) and foal sex affect attachment; 2) attachment, life history or foal sex influence mares' behaviour at weaning. The behaviour of 30 Thoroughbred mares and their foals from two UK studs was recorded via CCTV (postpartum) and live observations (pre- and post-weaning). Maternal affiliative and agonistic behaviours were recorded. Foal-directed licking, sniffing, and nose-to-nose contact were continuously recorded during the first hour postpartum. When foals were 3-5 months old at pasture with their dams (in groups of up to 12), live recordings were taken of mare-foal nursing, play, grooming and agonistic interactions and mare-foal proximities for 3.3h/d (continuous recording for twenty 10min intervals for three days). At weaning (removal of two mares at a time when foals were 4-6 months old to the furthest field available) mares' responses ('agitation': number of vocalisations, pacing, and agonistic behaviour events towards other mares/hour) were recorded for 16 mares for 4h following dam-offspring separation. Mare parity, previous number of foals, and foal sex were obtained from stud records. Principal component analyses (PCA) were used to calculate a mare-foal attachment index, combining postpartum and pre-weaning maternal behaviours. PCA identified three attachment components; they were uncorrelated with mare parity, number of previous foals, or foal sex. At weaning, mares spent 31.4 counts/h±4.6 (mean±SEM) exhibiting agitation behaviours. While no single attachment index, nor parity, affected mares' responses at weaning, mares with fillies tended to display more agitation at weaning in all models ($F_{1,11}$=4.124-3.386, p=0.067-0.093). Our results tentatively suggest that the welfare of mares with fillies might be more impacted during early, abrupt weaning.

Lay Message When free-living, mares form strong bonds with their foals and these relationships continue well beyond natural weaning. However, under domestic management foals are typically separated abruptly at a young age, disrupting these bonds earlier, a process mares may experience many times during their lives and which may impair their welfare. We examined how mares behave towards their foals and how they respond when they are taken away from their foals. Mares showed clear behavioural signs of stress after separation, and mares with fillies tended to react more strongly. These findings highlight potential welfare impacts of weaning on mares.

Separation anxiety in horses

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Horses are often separated from other horses. However, being separated from a close companion or being isolated from conspecifics are both potentially stressful scenarios for a socially gregarious species like the horse. Some individuals can struggle to cope with this, resulting in distress commonly referred to as separation anxiety (SA). In the scientific literature, little is known about SA in horses despite it being commonly discussed in the popular press and by owners. Therefore, the aim of this study was to better understand the nature of this phenomenon and to build a consensus for the definition of this state for future research purposes, considering the contexts in which it may happen and the potential behaviours which can be expressed. To do this, we sought owner and caregiver opinion on SA in horses using an online questionnaire. Content analysis of the transcribed responses was conducted to identify specific features and contexts for defining SA. This was followed by a consensus exercise with international equine behaviour experts to ensure face validity for the interpretations. Comments were collated and amendments made until there was a consensus among the 7 experts. The results highlight the importance of considering the environmental context in the manifestation of separation anxiety in horses as it can arise in a variety of distinct situations. Indeed, we identified eight different timings of potential importance characterising when separation anxiety in horses may occur. These range from the initial presentation of stimuli that may act as predictors for separation during 'preparation' for departure through to the act of separation and ultimately to the 'loss of contact'. These scenarios are not restricted to group-housed horses. Moreover, we identified multiple signs associated with separation anxiety, which may be classified in line with different components of emotion.

Lay Message Being separated or isolated from a companion is stressful for many horses, but they may show this distress in different ways and at different times. Regardless of this all responses are treated as if they are part of a single phenomenon called "separation anxiety". We identified eight different contexts that may be important to consider along with whether the horse of concern is being left behind or the one actively leaving the group. We have also catalogued the specific signs that may help to differentiate meaningful forms of separation anxiety and so developed a comprehensive theoretical model of separation anxiety.

PLENARY

The internal biodiversity of the horse – an update on parasitology

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Horses are natural hosts of an unusually large number of intestinal helminth parasite species. In fact, the nematode species diversity is larger than for any other domestic animal species. The strongylid group alone contains more than 60 species, of which horses are known to typically harbor between 15 and 25 species occurring in natural mixed species infection. Adding to this are other important parasite categories such as cestodes and ascarids, which are both capable of causing significant disease. While many of these parasite species are potential pathogens, they only exceptionally cause disease or discomfort, and most horses tolerate even large burdens very well. Traditional approaches for equine parasite control have been based on frequent routine administration of anthelmintic drugs without obtaining diagnostic information or drug resistance status. However, this approach has led to high levels of drug resistance in several of the aforementioned equine parasite species, and many farms are now experiencing complete treatment failure, *i.e.*, situations where none of the currently available antiparasitic products are effective against the parasites present. This is concerning given that new anthelmintic drug classes with new modes of action have not been introduced in the past several decades, and no new products are expected within a foreseeable future. Because of this, the equine industry is forced to revert to old husbandry procedures focused on good pasture management and cross or mixed grazing with ruminants. However, there is limited current research on the impact of these procedures, and past research did not include all relevant equine parasite categories. The advent of modern DNA sequencing technologies and metabarcoding techniques has opened new research avenues into investigating transkingdom relationships between macro- and microorganisms naturally inhabiting the equine intestinal tract allowing for a more sophisticated approach to parasite control than the target elimination strategies of the past.

Lay Message Intestinal worm parasites are natural inhabitants of the equine gut, and all horses are infected to some extent. Most horses tolerate even large worm burdens without experiencing disease or discomfort, but disease can occur on an exceptional basis. Historic approaches to parasite control has led to high levels of drug resistance in equine parasites, and it is time to rethink approaches to parasite control and obtain better knowledge of interrelations between micro- and macroorganisms naturally inhabiting the gut.

PLENARY

Meeting the foraging needs of obese horses

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Obesity is a prevalent condition in domestic horses and is strongly associated with an increased risk of metabolic disorders, including insulin dysregulation and laminitis. Effective prevention and management depend on aligning energy intake with energy requirements; however, achieving this balance remains challenging under practical management conditions. Horses exhibit considerable individual variation in energy metabolism, with clear distinctions between “easy keepers” and “hard keepers.” These differences complicate the formulation of appropriate feeding strategies, particularly when combined with variability in exercise levels. At the same time, the estimation and comparison of feed energy values remain problematic due to a lack of globally harmonised evaluation systems, constraining evidence-based decision-making in practice. Management systems further influence control over energy intake. Individually housed horses allow precise rationing, whereas group housing reduces the ability to regulate individual feed consumption. Pasture-based systems present even greater challenges, as both intake and forage quality are difficult to quantify. This is particularly important given that pasture grass often has a relatively high energy density, increasing the risk of excessive energy intake in obesity-prone horses. Importantly, horses have a strong intrinsic motivation to engage in foraging behaviour, which is essential for their welfare. Restrictive feeding strategies may therefore create a conflict between maintaining metabolic health and supporting natural behavioural needs. This presentation will address this central dilemma by integrating current knowledge on equine energy metabolism, feeding systems, and behaviour, with the aim of improving both welfare and metabolic health in obese horses.

Lay message Obesity is common in horses and increases the risk of serious health problems such as laminitis. Managing weight is difficult because horses have different energy needs and often get too much energy from feed and pasture. At the same time, horses need to spend many hours foraging to meet behavioural needs. This presentation discusses how to balance natural foraging behaviour with feeding to improve both health and welfare.

Do horses work for forage when feed is freely available? An exploratory study of contrafreeloading behaviour

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Contrafreeloading (CFL) describes the choice to work for food despite identical food being freely available. Although CFL has been demonstrated across numerous species and frequently cited to justify effort-based enrichment practices, empirical investigation in horses remains limited. Horses are a species whose teleonome is organised around sustained, locomotory foraging, despite domestic management typically limiting this. Whether horses will actively engage in effortful foraging when food is freely available has direct implications for understanding equine foraging motivation and for the design of enrichment activities. This study examined whether domestic horses exhibit CFL behaviour and whether such behaviour represents feeding preference. After familiarisation with the CFL feeder which released small amounts of hay when manipulated, 36 mares were given access to freely available lucerne hay and the feeder filled with the same hay. Feeding duration and bouts, and first-choice behaviour were recorded. Preference was defined using proportional time thresholds, with sensitivity analyses conducted at 5%, 10%, and 15% of the time spent per feeding option. Horses spent significantly more time feeding from free hay (715±222s) than from the CFL device (59±78s; Wilcoxon signed-rank test, $V=0$, $p<0.001$). Mean feeding time of 8.1% was allocated to the CFL option, and eight horses did not engage with it at all. Classification of horses as contrafreeloaders varied significantly across sensitivity thresholds (Cochran's Q, $Q=31.83$, $df=2$, $p<0.001$), although first-choice behaviour did not differ from chance ($p=0.405$) and was not associated with CFL classification (Fisher's Exact, $p=1.00$). These findings indicate that while many horses demonstrate a willingness to contrafreeload, there was individual variability in performance consistent with differences in expressed teleonome. While providing options for CFL may support engagement with a salient feeding affordance for some horses, it should not be treated as a biologically meaningful substitute for free access to feed across all horses.

Lay Message Contrafreeloading occurs when animals choose to work for food despite identical food being freely available. This has been observed in many species, but has not previously been tested in horses. In this study, 36 mares were offered lucerne hay alongside the same hay placed in a ball feeder that released small amounts when pushed. Horses spent significantly more time eating the freely available hay, and some did not use the feeder at all. Although a few horses engaged with the device, interest varied widely, suggesting that while horses may show a willingness to contrafreeload, they prefer to consume free food.

Exploring opportunities to enhance equine weight management within an equine welfare charity

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Equine obesity is a concern for welfare charities caring for obesity prone equids due to its association with significant health problems. A range of weight management interventions (WMI) may be adopted; however, these can pose challenges for caregivers and affect other aspects of equine welfare. Part of a larger project conducted by a charity seeking to improve its WMI, the aim was to explore professional caregivers' perception of current WMI, identify potential solutions, and barriers that may prevent their implementation. Thirteen semi-structured interviews were conducted with charity volunteers and employees involved in care, training or resource provision for resident equids. Interviews were recorded, transcribed, anonymised and analysed using reflexive thematic analysis. Participants were particularly concerned that WMI did not always adequately meet equids' behavioural needs and could negatively affect their mental health. For example, when restricted grazing was perceived to cause hunger and frustration, leading to high levels of agonistic behaviour when supplementary forage was provided. Participants felt WMI could create challenges for humans by causing equine behaviour problems and dangerous situations, such as biting, kicking and being difficult to catch or lead. Participants' feelings about WMI highlighted the potential for differences between organisational expectations and their personal values, attitudes and beliefs. When discussing suggestions for new WMI, participants focused on areas such as encouraging movement, enhancing forage provision, providing enriched environments and non-grass turnout in specific circumstances, giving examples to highlight how this might be achieved. Weight management interventions are routinely evaluated using morphometric measurements but do not always include appropriate behavioural assessments. These results highlight the importance of assessing equids in specific contexts to determine the impact on their mental state. This study demonstrates why collaboration between all stakeholders involved in designing and implementing WMI is essential for facilitating effective cross-organisation human behaviour change.

Lay Message Equine obesity is a concern for welfare charities, and a range of weight management interventions (WMI) may be adopted. Semi-structured interviews were conducted with volunteers and employees to explore their perception of the WMI used by a charity. Participants felt that some WMI could negatively affect equids' mental health, did not always adequately meet their behavioural needs, and created challenges for humans by causing behaviour problems and dangerous situations. Participants suggested areas for improvement, giving examples. This study demonstrates why collaboration between stakeholders involved in designing and implementing new WMI is essential for facilitating cross-organisation human behaviour change.

From yearling to racehorse: A two-year study of behavioural time-budgets in thoroughbreds

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The effects of mental and physical stress on equine welfare in Thoroughbred yearlings entering race-training are increasingly scrutinised. Objective, continuous monitoring of behaviour using activity sensors enables detailed assessment of changes in behavioural time-budgets. The present study evaluated feeding, resting and alertness patterns in response to increasing workload as horses move from pre-training to race-training. Thirty-two Thoroughbred yearlings entering pre-training at a single yard were included, of which thirteen progressed to race-training at a professional yard. Behavioural activities were recorded for 48 hours at bimonthly intervals using activity sensors (ActiGraph GT9X with IMU) which were attached to neck collars. Data collected were classified into activities such as eating or lying down using a previously validated deep neural network. The study period was divided into habituation (H), pre-training 1 (PT1; indoor ridden exercise), pre-training 2 (PT2; racetrack cantering), race-training 1 (RT1; gallops >30km/h) and race-training 2 (RT2; high-speed exercise >40km/h and race starts). During race training, concentrate feeding increased with workload and roughage was provided ad libitum. Proportions of time budgets were analysed using mixed-effects models with horse as a random effect. Main changes were evident in the times spent eating and resting: Proportion of time spent eating concentrate increased from PT to RT ($P<0.001$) (PT1:4.0±0.4%; RT2:10.5±0.6%), whereas time spent eating roughage decreased from PT to RT ($P<0.001$) (PT1:41.1±0.9%; RT2:26.1±1.3%).Time spent standing sleeping increased from H to RT ($P<0.01$) and from PT to RT2 ($P<0.001$) (H:8.5±0.5%; PT1:9.3±0.5%; RT2:12.3±0.6%). Time spent standing alert decreased from H to PT ($P<0.001$), and PT1 to RT ($P<0.001$) (H:7.1±0.4%, PT1:5.7±0.4%, RT2:3.5±0.5%).Overall, increasing workload was associated with more resting, less attentive behaviour and increased concentrate intake, consistent with higher energetic demands. The marked reduction in roughage intake during race training may have important implications for health and welfare in young racehorses and warrants further investigation.

Lay Message This study used activity sensors to track how young race horses' behaviour changed as their training intensified. With a heavier workload, horses rested more, were less alert, and ate more concentrate feed. A marked reduction in time spent eating roughage was also observed, a finding that may have important health and welfare implications and requires further investigation.

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Consensus Report from the Havemeyer International Working Group on Equine Pain Assessment

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Recognition and assessment of pain in horses and donkeys are essential but challenging: a gold standard is lacking. Despite many different types of scales were published in peer reviewed A-journals , a research-practice gap exists. Many published scales, while scientifically robust, are time-consuming, require specific training, or were developed in narrow contexts. As a result, pain recognition remains too often too subjective and inconsistent. This has led to a lack of consistent application both in the clinic as well as in the field, with risks of under diagnosis and under treatment. To address these issues, an international Working Group of leading Equine Pain assessment experts (WGEP) of different scientific fields was convened to review all available methodologies and outline a pathway forward including standardisation. Over two years and two WGEP meetings the group finally concluded that no single method can fully capture the complexity of equine pain in all manifestations across contexts. There was consensus on the need for a tool that is simple, standardised, and practical, with potential for widespread adoption. This tool must be scientifically robust, practical, brief, intuitive, and feasible in busy hospitals as well as in field / research settings, while still capturing the multidimensional nature of pain. After a careful robust process, it was decided that the Equine Pain Scale (EPS) developed in Demark was the most pragmatic option. It is widely available and its concise structure spans four domains — facial expression, behaviour, posture, and interaction with people/environment — covering all core features of pain. The EPS consist of nine categories, and each category can be scored between 0 (no pain) – 4 (most intense pain). No specific training is needed. The immediate priority is to promote systematic use of EPS in its current form, with refinement to follow once sufficient clinical data are collected.

Lay Message Recognition and assessment of pain in horses and donkeys are essential but challenging. Several different pain scales are developed all with their own scope and all with different issues for practical use. This has led to infrequent use of any scale, with the risk of under diagnosis and under treatment. An international group of leading Equine Pain assessment experts have reviewed all available scales and methods. Finally, they came to a path forward and propose the Equine Pain Scale (EPS) as the most pragmatic option currently available to be used in research and hospitals.

What if horses were humans? Comparing bit pressures to human pressure pain thresholds

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Background: Evidence indicates that bits can cause pain-related behaviours and even oral lesions in horses which is a significant welfare concern. Research question: Although studying pain in animals is challenging, the similarities in the physiology of pain processing (nociception) across mammals (e.g. Raja et al. 2020) suggest that pain perception in humans and horses is principally comparable. It is essential to highlight, that pressure is defined as force per unit area, p = F/A. Rein tensions reported in the scientific literature correspond to F (force) (e.g. MacKechnie-Guire et al. 2025). It is less clear how A (the area where the bit is placed) can be defined.

Methods: In a recent paper (Animals, 2025) we compared well established human pressure pain thresholds (PPTs) to bit pressures calculated by Mellor (Animals, 2020); calculations were based on rein tensions reported in the literature.

Results: The bit pressures (kPa) calculated by Mellor (2020) range from a minimum of 91.2–107.87 to a maximum of 1314.09–4285.5. Human PPTs are 232.4 for the face, 445.3 for the hand, and 535.5 for the foot. These comparisons reveal that only the lower range of calculated bit pressures would be pain-free for humans; average to maximum pressures would cause strong pain sensations. Moreover, data on pressure pain-induced stimulus-response functions indicate that these bit pressures significantly exceed human pain tolerance thresholds.

Conclusion: If humans are accepted as “mammal model species” for horses, this comparison raises welfare concerns for horses. The discussion of these findings will focus on i) the physics of pressure, which has implications with regard to different types of bits and bridles, including brittles bridles; ii) the psychophysiological differences between pain detection threshold and pain tolerance, which is of significance for our understanding of pain in the context of the nature of horses.

Lay Message Evidence suggests that bits can cause pain-related behaviours and oral lesions in horses, constituting a significant welfare concern. While studying pain in animals is challenging, the foundations of pain processing are expected to be similar across mammals, suggesting horses and humans perceive pain comparably. Comparing established human pressure pain detection thresholds for the face, hand, and foot with bit pressures estimated from rein tension reported in the scientific literature reveals that only lower bit pressures might be pain-free for humans. Higher pressures would cause significant pain, raising serious concerns about the welfare of horses exposed to these pressures.

Seeing the signs: Training equestrians to recognize equine pain

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Background: Accurate recognition of pain in horses is essential for safeguarding their welfare. However, horses are known to mask pain behaviors, making recognition challenging. Facial indicators of pain provide useful assessment tools but require correct interpretation. Educational interventions are widely used to improve welfare-related knowledge, yet their effectiveness remains unclear. Objectives: This study examined the effect of an educational lecture on equestrians' visual attention patterns when assessing equine facial expressions of pain and their subsequent ability to rate these accurately. Methods: Twenty-four equestrians evaluated eight photographs of horses displaying varying pain levels using a numerical rating scale (NRS; 0–10). Eye movements were recorded using a webcam-based eye-tracking system. Assessments were completed before and after a 40-minute online lecture on equine facial indicators of pain. Visual attention on predefined facial features (eyes, ears, nostrils, mouth) was analysed using total number of fixations (TNF), total duration of fixation (TDF) and time until noticed (TUN). Pain assessment accuracy was determined by error scores relative to expert ratings. Data were analysed using linear mixed models. Ethical approval and participants' informed consent were obtained.

Results: Visual attention differed significantly across facial features for TNF, TDF and TUN (all $p < .001$). Prior to the intervention, participants focused predominantly on the eyes. Post-intervention, visual attention shifted towards the ears, mouth and nostrils, whereas attention directed towards the eyes decreased. Pain assessment accuracy improved significantly, with lower absolute error scores relative to expert ratings ($p = .029$). In particular, overestimation of pain in pain-free horses was significantly reduced (mean difference = 1.27, $p = .049$).

Conclusions: The shift towards a broader visual scanning pattern suggests the development of a more systematic visual search strategy. Improved pain assessment accuracy suggests that education may support recognition of equine facial expressions of pain, with further training potentially enhancing these skills and supporting equine welfare.

Lay Message Recognizing pain in horses is essential for protecting their welfare, but signs of pain can be subtle and difficult to recognize. In this study, equestrians assessed eight photographs of horses before and after attending a lecture about facial indicators of pain. Eye-tracking technology measured where and for how long participants looked while evaluating the horses. After the lecture, participants focused on more facial features rather than mainly on the eyes and showed improved pain assessment accuracy. These findings suggest that education can influence both visual attention and pain assessment performance. Training may further enhance these skills and support horse welfare.

Behavioral differences between isolation- and nociception-induced discomfort in horses

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Identification of equine discomfort and its causes is important for animal welfare. While validated behavioral tools exist for scoring of pain in settings where prevalence is high, the performance of field-based behavioral assessments is unknown during high arousal induced by non-painful stressors. This study compared behavior and basic time-activity budgets in the same horses (n=12) experiencing discomfort induced by ischemic nociception and isolation. Using a semi-randomized cross-over design with a minimum 12-hour washout period, horses were remotely recorded in their stalls during 10-minute observation windows adapted to two acute experimental induction methods. Ischemic nociception was induced using a validated ischemic cuff model inflated to 240 mmHg over the foreleg. Isolation was induced by removing a habituated conspecific from the stable. An ethogram was developed from observed behaviors, and videos were annotated in BORIS. Data were analyzed using Generalized Linear Mixed Models with individual horse variation as a random effect, using negative binomial distributions and Beta distributions. Significance was assessed via Type II ANOVAs (P=0.05) with Tukey post-hoc contrasts. Basic time-budget behaviors did not differ significantly between conditions, but individual behaviors distinguished the induced states. Nociception was characterized by increased pawing ($p=0.016$), whereas isolation was characterized by heightened vigilance, indicated by higher head positions ($p=0.009$) and increased looking behavior ($p<0.001$). Direct contrasts between the inductions showed that head position was lower during nociception than isolation ($p=0.002$), while stepping was higher during nociception than isolation ($p=0.014$). Because stepping did not differ significantly from baseline, it may distinguish between types of discomfort rather than serve as a standalone indicator. In conclusion, these findings suggest that behavioral indicators differ between discomfort of different origins during acute onset, which could help determining the cause of discomfort. Since pain-related behaviors fluctuate over longer periods, longer observation windows and additional models of discomfort need to be explored.

Lay Message To improve horse welfare, it is important to know if a horse is in physical pain or stressed. We tested 12 horses to see how their short-term behavior changed during mild, temporary painful stimuli versus the stress of being separated from a herd mate. We found differences in small 10-minute windows. Horses tended to scrape the ground more during the painful stimuli, while the stressed horses raised their heads and spent more time observing the environment. This shows that observing a horse's specific behaviors can provide better identification of the cause of discomfort.

When back pain limits performance: Objective links between mechanical nociceptive thresholds and kinematics in horseball Thoroughbreds

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Back pain is a common cause of poor performance in sport horses, yet objective links between mechanical sensitivity and spinal motion remain unclear. This exploratory study investigated associations between mechanical nociceptive thresholds (MNT) and thoraco-lumbo-sacral range of motion (ROM) in 12 Thoroughbred horseball horses with clinically diagnosed back pain. Mechanical nociceptive thresholds were measured at 17 sites using digital pressure algometry and aggregated into anatomical regions; mean MNT ranged from 6.40 ± 1.06 kg/cm^2 at the withers to 8.61 ± 1.55 kg/cm^2 in the mid-lumbar region. Spinal kinematics were recorded during in-hand trot using a nine-sensor inertial measurement unit system. Mean flexion–extension ROM was 4.31 ± 0.93° at T13, 4.33 ± 1.12° at T18, and 4.64 ± 0.64° at L3, while differential flexion–extension between T18–L1 was 2.51 ± 0.92°. Principal component analysis explored shared variance patterns, and region-specific general linear models examined associations between MNT and ROM. Significant region-dependent associations were identified: lateral bending was positively associated with MNT in the cranial ($p = 0.042$) and caudal thoracic regions ($p = 0.007$), axial rotation was negatively associated in the caudal thoracic region ($p = 0.023$), and flexion–extension was positively associated with MNT in the mid-thoracic ($p = 0.045$) and lumbo-sacral regions (overall model $p = 0.033$; flexion–extension $p = 0.008$). These findings demonstrate region-specific coupling between mechanical sensitivity and spinal mobility in horses with back pain. Together, these results advance understanding of the pain–motion relationship and support the development of objective, region-specific assessment strategies in equine practice.

Lay Message Back pain is a common problem in horses, but it can be difficult to measure or understand how it affects movement. This study explored whether areas of the back that are more sensitive are linked to changes in spine movement. We measured sensitivity on horses' backs using a handheld pressure device, and recorded spinal movement using small motion sensors. We found that the relationship between back sensitivity and spinal mobility differed depending on the anatomical region. Horses with greater sensitivity in the caudal thoracic and lumbo-sacral regions showed altered movement patterns, especially in lateral bending and flexion–extension.

The COMPASS Guidelines: A new research standard for equitation science and beyond

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Research on animal training and handling has long suffered from a critical disconnect: technically competent studies that nonetheless fail to answer the questions that matter most to animal welfare. Traditions, rather than evidence, have shaped practices across equestrian sport and beyond, while the growing pressure on industries to demonstrate social licence has created urgent demand for rigorous, independent science. The COMPASS Guidelines — Controls and Calibration, Objectivity and Open Data, Motivation and Methods, Precautions and Protocols, Animal-centred Assessment, Study ethics and Standards, Species-relevance and Scientific rigour — were developed by 22 researchers from eight countries to address precisely this gap. Instigated by the ISES Council, whose own First Principles of Training provided a conceptual foundation for the Guidelines' Motivation and Methods component, they represent the field's first comprehensive framework for welfare-focused behaviour modification research. Because every behaviour modification study employs either aversive or appetitive stimuli — or classically conditioned signals associated with them — the Guidelines apply differentially depending on the motivational mechanism under investigation. For ridden horses, where negative reinforcement via rein and leg pressure is near-universal, the ethical bar is correspondingly high: researchers must demonstrate that non-aversive study designs are inadequate and articulate a credible pathway from findings to improved practice. For unridden horses, observational and positive-reinforcement paradigms are often viable first choices, offering genuine "low-hanging fruit": video-based ethogram studies, Five Domains assessments without intervention, and positive reinforcement groundwork trials are relatively affordable, carry lower ethical complexity, and satisfy the appetitive-stimulus checklist developed as a companion submission tool for journals. The most demanding requirements cut across both paradigms and include: establishing individual physiological baselines, calculating cumulative welfare burden across all exposures, assessing post-inhibitory rebound following aversive stimuli, and demonstrating that welfare-based rather than performance-based outcomes are primary. These standards are non-negotiable precisely because they protect the credibility of the science itself.

Lay Message When scientists study how animals are trained, the quality of that science determines whether it helps animals or simply justifies existing practices. The COMPASS Guidelines, instigated by ISES, set new international standards for this research — ensuring studies are designed around what matters to the animal, not just what is easy to measure. For horse research, studies using rewards are more straightforward to conduct ethically than those involving pressure or discomfort, which carry a higher burden of justification. Companion checklists now allow journals to require these standards at submission, making rigorous, welfare-focused research the expected norm rather than the exception.

Relationship between equipment and oral and lower extremity lesions in Icelandic competition horses

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The aim of the present study was to assess the relationships between type of tack and leg and mouth lesions in Icelandic competition horses. Records were available from 6,075 attempted competition starts from 2,805 horses and included information on the presence, location, severity, and age of leg and mouth lesions, as well as on types of bits and bridles, boot weight, and demographic information. Data were collected in a standardized manner by stewards (n=127) via the IceTest Equipment App during regular equipment checks after competition starts at n=104 competitions in Germany, Denmark, and Switzerland in 2025. Correct use of equipment was checked but not analyzed. Overall prevalence of oral lesions was 14.0% (96.5% superficial and 3.5% deep / 68.0% fresh, 22.1% old, 9.9% old+fresh), which is lower than in an earlier study on high-level Icelandic competition horses (44%). In 1.1% (68.9% fresh, 17.6% old, 13.5% fresh+old) of the starts there were lesions in the lower extremities, and in 0.13% horses showed both mouth and leg lesions. Generalized linear mixed model analyses revealed no significant differences (all $P > 0.1$) in the probability of oral lesions for different bit styles (unbroken, single-broken, double-broken, or ported bits). However, significantly higher probabilities of oral lesions were observed in horses equipped with a drop noseband or similar cavesson design (drop, flash, anatomic, Micklem) compared to English cavessons that lack such a lower noseband ($F_{8,6050} = 7.92$; all $t \geq |4|$; all $P < 0.05$). The presence and weight of boots did not affect the probability of leg injuries ($F_{3,6037} = 0.07$; $P > 0.1$). Compared to other equipment factors, cavessons with a lower noseband markedly increased the risk of horses suffering from oral lesions, likely because the lower noseband is particularly effective in preventing the horse from opening the mouth, thus limiting its ability to evade harmful levels of bit pressure.

Lay Message Although the overall prevalence of mouth lesions was relatively high (14%), it was lower in the present study compared to earlier studies in competition horses. Cavesson design was a major determinant of mouth lesions, compared to other demographic and equipment factors, including bit design. Horses equipped with cavessons with a noseband below the bit (i.e., flash, drop, Micklem, anatomic) showed approximately twice the likelihood of presenting with mouth lesions compared to those equipped with English cavessons lacking such a lower noseband. In the interest of ethical equitation, the use of cavessons with a lower noseband should be reconsidered.

Race preparation and equipment in Standardbred trotters: associations with conflict-related behaviour during warm-up and pre-race phases

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In harness racing, effective communication between driver and horse through rein signals is essential for safety, performance and horse welfare. Various types of equipment are used to influence head–neck position, sensory perception and responsiveness to rein signals, including leverage bits, tongue ties, overchecks, blinkers, hoods, or ear plugs. This pilot study aimed to describe and compare the use of common racing equipment, conflict-related behaviours in horses, and driver-reported driveability during warm-up and pre-race phases. Video recordings from 43 horses participating in official harness races were analysed. Behaviour was scored during warm-up and pre-race (parade, test-start, start) using a predefined ethogram including oral behaviours, head movements (i.e., shaking, tilting, pushing up), and ear positions. Equipment (i.e., bit category, tongue tie, overcheck, blinders, hood, ear plugs) was recorded and drivers rated perceived driveability between 1 (poor) and 10 (excellent). Several equipment items were used more frequently pre-race than during warm-up. Overchecks increased from 38.1% (warm-up) to 83.3% (pre-race) and blinders from 7.1% to 59.5% ($p<0.001$). Tongue ties were used during warm-up in 13 horses and during racing in 20 horses. Head movements occurred more often pre-race (47.5%) than during warm-up (20.0%, $p=0.016$). Oral behaviours were common in both phases (warm-up: 88.6%, pre-race: 77.5%, $p=0.238$). Median conflict behaviour (i.e., oral behaviour, ears back, head movements, pulling reins, tail swish) scores were numerically higher pre-race (68.85; IQR 12.41–104.95) than during warm-up (32.94; IQR 16.33–56.40) ($p=0.179$). Mean driveability scores were similar during warm-up (7.95 ± 2.00) and pre-race (8.02 ± 1.80, $p=0.865$). Conclusions: Race preparation involved substantial equipment adjustments and coincided with increased head movement behaviours. Behavioural monitoring may therefore help identify responses to race preparation and inform welfare discussions about equipment use.

Lay Message In harness racing, horses are commonly warmed-up approximately one hour before the race (warm-up) and then return to the stable where equipment may be adjusted before racing (pre-race). Equipment was recorded during preparations in the stable and horse behaviour was analysed from videos to compare behaviour during both phases. Blinkers and overchecks were used more often pre-race than during warm-up. Head movements such as shaking, tilting or pushing the head up occurred more frequently pre-race. Observing horses during race preparation may help identify behavioural changes across phases that are relevant for safeguarding horse welfare.

Riders' perceptions of communication and control when riding with bits and sidepull bitless bridles

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Background: The effect of the bridle is central to equine welfare and the quality of horse–rider communication. Bitted bridles have been associated with oral discomfort and stress-related behaviours, whereas bitless alternatives have been proposed to reduce physical strain. However, limited research has examined how transitioning from bitted to bitless riding affects riders' perceptions of communication and horse behaviour. Objective: The aim was to investigate riders' perception of differences between riding with bitted and bitless bridles, focusing on communication, aid application, responsiveness, perceived control and horse behaviour. Methods: Data were collected at six riding schools. 24 riders rode two horses in each, bitted (snaffle) and bitless (sidepull) in a dressage program in a partial crossover design. Each horse were ridden by two riders, half of them started with bitless, the other's on bit. The horses were naive to sidepull bridles. Focus group interviews were performed after the testdays, analysed using qualitative content analysis. Results: Riding horses in a sidepull bitless bridle was frequently described as less precise, particularly in lateral flexion and half-halts. Riders perceived reduced clarity in rein signals and sometimes a feeling of diminished control. Many also described increased awareness of their seat and leg aids, as the absence of a bit exposed reliance on the hand. Some horses were perceived as more forward and more relaxed when ridden bitless, while others became heavier in the forehand or less responsive. Riders highlighted that experience of bitless riding influenced outcomes, and several expressed that more training would likely improve communication with the bitless bridle. Conclusion: From a rider perspective, bitted bridles were associated with clearer communication and greater precision, whereas sidepull bitless bridles encouraged increased bodily awareness and were sometimes perceived to enhance relaxation in the horse. The transition to bitless was perceived as challenging but valuable learning experience.

Lay Message This study explored riders experience of riding with a bit (snaffle) compared to a sidepull bitless bridle. The horses were naive to sidepull from start. Riders generally reported better communication, clearer rein contact, and greater control when using a bit. However, some felt that horses appeared more relaxed when ridden bitless, even though steering and precision were more challenging. Riding without a bit resulted in increased awareness of seat and leg aids. The results suggest that equipment choice influences communication and that familiarity and training, of both horse and rider, play an important role in successful transitions to bitless riding.

What and how horses learn can shape how they feel: Prediction error learning and mood state in thoroughbreds

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Affective states may influence learning performance and vice versa, with implications for horse welfare and training. We examined whether affect, assessed using a cognitive bias test (CBT), influenced learning performance in a food-reinforced panel-pressing task (PPT) incorporating researcher-imposed reward prediction errors (RPEs), and vice versa. Thoroughbred horses (n=19, 10.14 years±4.64) completed four CBT sessions interleaved with PPT learning sessions: CBT1; PPT acquisition (PPTac + CBT2); PPT repetition to induce habitual behaviour (PPTrep); PPT extinction to induce RPE change (PPTex1 + CBT3); PPTex2 followed by reinstatement (PPTrein + CBT4). CBT involved a spatial discrimination GO/NOGO test where unrewarded ambiguous locations; median (M), near-positive (NP), and near-negative (NN), were presented between pre-trained positive (rewarded) and negative (non-rewarded) locations. PPT learning trajectories were modelled using LMMs; PPT task latency was regressed on trials to criterion creating individual learning slopes used as random effects in later models. GLMMs modelled CBT GO rate and LMMs GO latency. Relationships between individual PPT parameters and between-session CBT changes were examined using OLS regression, controlling for prior-session GO rate. CBT1, a marker of baseline mood, did not predict PPTac parameters. However, in the final PPTac session, horses whose response latencies were decreasing more quickly were less likely to make M GO responses in CBT2 compared to CBT1 (β=−2.37, p=.028). During PPTex1, when food was omitted to induce a negative RPE, horses who stopped responding more quickly showed smaller recovery of M GO during CBT3 (β=−0.260, p=.014). At PPTex2, steep response latency increases predicted GO responses to NP (β=0.320, p=.024), while slower reinstatement of the response during PPTrein predicted increased GO to NN (β=0.087, p=.004) in CBT4. These findings provide preliminary evidence that experience of positive and negative RPEs may influence mood state in horses, suggesting that learning is not emotionally neutral. This has implications for horse training and welfare.

Lay Message Horses' emotional states and their learning experiences are linked in ways that matter beyond the training arena. We tested whether how horses learned and unlearned a food reward association affected their mood, measured by how willingly they approached ambiguous options in discrimination tests. Horses that were still actively consolidating the reward response at the end of training showed the largest decrease in mood but horses who were quicker to stop responding when no longer rewarded showed improved mood. The pace of learning and unlearning shaped subsequent mood beyond the training context showing that learning creates an emotional footprint.

Do you see what I see? Unpacking human judgement to develop reliable AI tools for equine affective state assessment and strengthen welfare standards in equestrian sports

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The equestrian industry is increasingly scrutinised regarding its social licence, especially for the impact of equine sports on horses' emotional well-being. Despite ongoing debate, competition-wise decisions lack a strong scientific foundation. Competition horses face stressors including equipment, environmental factors, and sub-optimal rider aids, resulting in behavioural changes. Current welfare assessment tools seldom focus on ridden horses, demonstrating the need for objective indicators of affective states in this setting. Artificial intelligence (AI) technologies offer potential solutions, but their effectiveness is limited by inconsistent annotation and unreliable datasets. To address this gap, we developed, annotated, and validated a dataset derived from a real-world dressage competition. Forty-seven videos were segmented into 5–10 second clips. Ten equine behaviour specialists participated (complete data from 7), evaluating 240 clips and classifying each as Positive, Neutral, or Negative affective state, along with descriptions of observed behaviours. Thirty clips (ten per category) were chosen based on inter-rater agreement and behavioural diversity, then assessed by 37 participants at a workshop during the ISES-2024 conference. These participants, blinded to original classifications, rated the clips and reported their certainty levels. Fleiss' Kappa coefficients were 0.594 (specialist panel) and 0.358 (workshop participants), reflecting two distinct groups with different expertise and backgrounds. Agreement was strongest for negatively classified clips (specialist panel: 0.937; workshop: 0.546), while confidence in Neutral ratings was significantly lower than for Negative and Positive ones (Bonferroni-adjusted paired t-tests, $p<0.001$).These findings highlight the necessity for rigorous methods when developing datasets for AI-based welfare assessment tools, considering context, annotation, and intended use. Our results indicate that the dataset developed may provide a reliable ground-truth for training AI models to detect negative affective states in ridden horses, although uncertainty remains for behaviours of intermediate valence. This work establishes groundwork for future AI applications to improve welfare in equestrian competitions. (Ethics-approval-3477011122-ID088254).

Lay Message The welfare of horses in sport is increasingly questioned, yet scientific evidence to support decisions about training and competition remains limited. Horses competing at high level may experience poor welfare, potentially leading to conflict behaviours or injury. AI-based technologies could help create objective tools to assess emotional states in ridden horses. Specialists evaluated equine behaviour from dressage competition footage, developing a dataset to train AI models. Agreement was moderate overall, but strong consensus was reached for clips rated as negative. This dataset shows promise for training AI to detect negative emotional states. Neutral behaviours remain more difficult to classify.

Do horses learn to learn? Effects of training density on horses' acquisition of a negative reinforcement task

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In the present study, we asked whether training multiple tasks in parallel alters the learning progress of an initial task. A convenience sample of twenty horses were trained to lower the head in response to downward rope pressure (task A). Ten horses were trained exclusively in this task once weekly for six weeks. Using a pairwise design (one trainer per pair), the remaining ten horses were additionally trained in two other tasks on separate days: stepping forward with one forelimb via rope pressure at the carpal joint (task B) and turning the head from tactile pressure below the cheekbone (task C). All horses were naïve to the cues for the tasks and randomly assigned to treatments (approximately balanced for breeds, disciplines, housing, and riding frequency). Outcome variables were analysed using mixed models and verified via full-reduced-model comparisons. All tasks improved across sessions (increasing performance score, decreasing pressure and latency; all $p<0.001$). Although tasks were selected based on similar performance in an earlier study, here, the additionally trained tasks B and C showed enhanced acquisition patterns compared to task A. This indicates a "learning-to-learn" effect with higher performance scores (estimates±sd, B: 0.89±0.34, C: 1.51±0.34, $p<0.001$) and steeper learning curves across sessions (interaction performance*session: B*session: –0.18±0.09, C*session: –0.18±0.09, $p<0.05$). Task-dependent effects occurred: head-related tasks (A, C) required less pressure and were achieved faster than the forelimb task B (pressure: $p<0.01$; latency: $p<0.05$). Parallel training of tasks B and C did not significantly affect performance score, pressure requirements, or latency in task A (all $p>0.05$). These findings suggest that training multiple tasks in parallel does not impair the acquisition of an initial task and may indeed facilitate overall learning efficiency. From a learning-theory perspective, structured task variation appears compatible with horses' cognitive nature and may enhance training progression without compromising task-specific learning.

Lay Message Training horses involves teaching them to respond clearly and reliably to human signals. We tested whether learning several tasks in parallel affects how well horses learn an original task. Twenty horses were trained to lower their head, while half of them were additionally taught two other exercises. All horses improved over time. Importantly, learning extra tasks did not interfere with the first one. In fact, horses seemed to learn new tasks more quickly and easily, suggesting they became better at learning overall. Teaching different exercises in parallel may therefore improve training efficiency without confusing the horse.

The effect of pre-training on behavioral response to Novel Object Tests in young thoroughbreds

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Young horses in initial training are exposed to numerous novel experiences. For this reason, Thoroughbreds typically undergo a pre-training period before entering specialized race training. This study investigated the effects of a 12-week pre-training program on the behavior of 25 young Thoroughbreds (18–24 months). The program included habituation, handling, and progression to first canter sessions on a racetrack. Behavior was assessed before (A) and after (B) pre-training using novel object tests (NOT) with different objects and 24-h stall monitoring. NOT behavior was video-recorded and coded with a validated ethogram including 34 behaviors. Inertial measurement unit sensors simultaneously recorded activity during NOTs and continuously in the home stall. After pre-training, horses showed significantly increased locomotor activity during ten-minute NOTs (trot duration: A 16.1 ± 6.7 s, B 41.6 ± 6.7 s, $p<0.01$; gallop: A 1.9 ± 1.6 s, B 11.4 ± 1.6 s, $p<0.001$; bucking: A 1.0 ± 2.8 s, B 22.2 ± 2.8 s, $p<0.001$) and greater tactile exploration (muzzle contacts: A 2.2 ± 0.8 counts, B 6.0 ± 2.0 counts, $p<0.05$), despite fewer total approaches (A 8.1 ± 0.9 counts, B 6.3 ± 0.7 counts, $p<0.05$). Principal component analysis (PCA) of NOT and stall variables followed by k-means clustering identified four clusters of associated behavioral parameters: (1) high activity and offensive behavior, (2) exploratory motivation, (3) vigilance and defensive behavior, and (4) calm observational behavior. No sex differences were detected; however, inter-individual variability increased after pre-training, indicating diverse coping strategies and sensitivity to the training phase. These findings demonstrate that interpretation of NOT responses requires multidimensional assessment rather than reliance on single measures such as latency or contact frequency. The shift toward increased locomotion and active exploration after pre-training suggests adaptive behavioral modulation in response to early training. Differentiating coping styles through NOT responses may enhance understanding of individual adaptation and inform evidence-based welfare strategies.

Lay Message Young Thoroughbred horses encounter many new experiences during early training. We examined how a structured 12-week pre-training program influenced their responses to novel objects. Using detailed behavioral observations and activity sensors, we found that horses showed more active and exploratory behaviors after pre-training. Importantly, horses differed in how they adapted, indicating individual coping strategies.

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The stress response to different pretraining events does not differ between yearling and two-year-old thoroughbred fillies

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The resilience of young horses to anthropogenic stressors will affect their welfare when they start training for racing or equestrian sports. This is particularly relevant for Thoroughbreds, which often begin pretraining at the age of 18 months and race as two-year-olds. We therefore investigated if Thoroughbreds may benefit from a later start of their racing career. Yearling (n=12, age 17-19 months) and two-year-old fillies (n=11, age 26-28 months) underwent a 12-week pretraining, progressing from free movement in an indoor arena to free riding. For nine events, changes in salivary cortisol concentration and heart rate were determined. Data were analysed by repeated measure ANOVA with event and time as within subject factors and age as between subject factor. Cortisol release ($p<0.001$) differed among events (event $p<0.001$, event x time $p<0.001$) and was largest in response to first free movement in an indoor riding arena and first exercise in a horse walker. First mounting of a rider, riding on the longe and free riding in the arena induced only a minor cortisol release whereas first riding in a novel, larger arena again induced a marked cortisol release. There was no age effect on the response to pretraining events, but cortisol release was greater in two-year-olds than in yearlings during first free movement and first riding in the large arena (event x age $p<0.05$). Heart rate increased during all events (time $p<0.001$). Basal and post-event heart rate was higher in yearlings than in two-year-olds (age $p<0.001$) reflecting differences in body size. In conclusion, our study showed no beneficial effect of a later start of a carefully conducted pretraining program on the stress response of Thoroughbred fillies. In particular, based on physiological stress parameters, yearling fillies perceived the pretraining events not as more stressful than two-year-olds.

Lay Message Lay person message: The stress response of yearling and two-year-old Thoroughbred fillies to different events in pretraining was analysed. The results indicate that yearling Thoroughbred fillies do not perceive pretraining as more stressful than two-year-olds.

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Inter- and intra- specific social facilitation in horses (Equus caballus) when approaching a stressor

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Social facilitation is a key mechanism in equine social behaviour with implications for survival, reproduction, management and training. This study investigated the existence of inter- and intra-specific social facilitation in horses approaching a stressor. Twenty-seven horses were divided into three groups of nine: alone (G1), accompanied by a familiar human (G2), or accompanied by a known conspecific previously familiarised with the stressor (G3). Each trial lasted 10 minutes in a familiar round pen; the stressor was a coloured inflatable balloon with ribbons animated by a fan. Five parameters were assessed: general behaviour, spatial use of the area, facial expressions (EquiFACS), mean heart rate (thoracic monitor, compared to resting baseline), and salivary cortisol (baseline before trial; post-trial sample at 20 minutes to capture peak free cortisol release). Groups were compared using one-way ANOVA with Tukey's HSD post-hoc test. Group 1 exhibited a significant increase in salivary cortisol following stressor exposure ($p=0.001$), whilst Groups 2 and 3 showed a non-significant decrease ($p=0.134$ and $p=0.687$); normalised cortisol variation confirmed significant differences between Group 1 and the accompanied groups (G2: $p=0.001$; G3: $p=0.013$). Mean heart rate was significantly higher in Group 1 than in Groups 2 and 3 ($p<0.001$), which did not differ from each other ($p=0.571$). Group 1 horses were positioned furthest from the stressor more frequently (G2: $p=0.005$; G3: $p=0.007$). Group 1 displayed lip presser (AU24) more frequently than Groups 2 and 3 ($p=0.003$ and $p<0.001$); Group 2 showed higher frequency of ear forward (AD101) than the other groups. Mean HR and post-exposure salivary cortisol were strongly correlated ($r_{25}=0.83$, $p=0.001$). These findings confirm that social facilitation operates in horses approaching a stressor, both inter- and intra-specifically, suggesting that providing a familiar human or conspecific during stressful situations such as veterinary procedures, transport, or novel environment exposure may reduce acute stress responses.

Lay Message Horses are highly social animals and this study explored whether having company, either a familiar human or another horse, makes a difference when they face something new and potentially scary. We tested 27 horses individually, some alone and some accompanied, and measured their stress responses through behaviour, use of space, facial expressions, heart rate variation, and salivary cortisol, a key stress hormone. Horses that had company showed significantly lower stress indicators than those facing the situation alone. This suggests that thoughtful use of social companionship could be a simple and effective tool to improve horse welfare during potentially stressful situations.

Do horses feel different after therapeutic riding? A combined cognitive and physiological assessment

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Equine-assisted interventions are increasingly used in human therapy, but their effects on horses' affective states remain poorly understood. Traditional welfare assessments rely on behavioural or physiological stress indicators, but cognitive measures may provide additional insight into animals' emotional experiences. This pilot study evaluated judgement bias and heart rate parameters (Heart Rate Variability, mean Heart Rate, Maximum HR) in horses following a therapeutic riding lesson (TL) compared to a normal riding lesson (NL). Ten experienced school horses (7 geldings, 3 mares) were trained in a spatial discrimination task to distinguish a positive from a negative bucket location and were subsequently tested after either a TL or NL in a within-subjects design. Latency to approach ambiguous locations (near positive, middle, near negative) was adjusted for individual walking speed. To assess physiological responses heart rate parameters were continuously recorded during both lesson types and Cognitive Bias (CB) tests. No significant differences were found in adjusted latency after TL versus NL at any ambiguous position ($p>0.39$), indicating that horses were neither more optimistic nor pessimistic following TL. HRV was significantly higher during TL compared to NL before the CB test (TL: 59.4±30.5, vs NL: 33.2±18.9 ms; $p=0.033$), while mean and maximum HR were significantly lower during TL (mean HR: TL 47.4±4.6 bpm vs. NL 68.6±13.3 bpm; max HR: TL 80.3±15.8 bpm vs. NL 125.7±20.2 bpm; both $p<0.001$), indicating lower physiological arousal during TL. Overall, the absence of cognitive bias differences, together with higher HRV and lower heart rates during therapeutic riding, suggests that TL did not negatively affect horses' affective states, although these physiologically differences may also reflect lower workload than NL. These findings support the feasibility of combining these measures in equine-assisted interventions. Larger-scale studies with refined cognitive methods are needed to further clarify the impact of therapeutic riding on equine welfare.

Lay Message Therapeutic riding is widely used to help people; little is known about how it affects the horses involved. This study compared horses' emotional and physical responses during therapeutic and regular riding lessons. Ten horses were tested using a learning task. Horses showed no signs of feeling more positive or negative after therapeutic riding, but heart rates were lower, suggesting they were calmer and less physically stressed than during regular lessons. Overall, no evidence of negative effects being was found under the conditions of this pilot study. Combining behavioural and physiological measures may help better understand how horses experience these interventions.

Welfare assessment of working horses in Bishoftu (Ethiopia) and the attitudes and knowledge of their owners

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Working horses play an essential role in transport and livelihoods in many areas of Ethiopia. This study assessed the welfare of 100 working horses in Bishoftu and their owners' knowledge and attitudes. Welfare was evaluated using direct animal-based observations, and owner knowledge and attitudes were assessed through structured interviews conducted between January and February 2026. Feeding frequency was generally regular, with 75% of horses fed three times per day. In case of health problems, 87% of owners contacted SPANA, while 13% contacted government veterinarians for vaccination, medication, and parasite control. Owner perception of welfare was positive: 89% considered their horses healthy, pain-free, and in good welfare, and 94% believed they could identify signs of pain or distress. However, a disconnect was observed between these perceptions and measured welfare outcomes. All assessed horses were stallions aged between 3 and over 10 years, and 54% worked five days per week. Body condition score was considered good in 95% of horses. Despite this, several welfare concerns were identified. Feed was present in 51% of visits, but water was not provided during observations. Lack of shade was another concern, with 92% of horses exposed to direct sun. Health issues reported during the previous year included colic (17%), skin lesions (19%) mainly due to harnesses, and epizootic lymphangitis (9%). During welfare assessments, 64% of horses had skin problems, 8% injuries, and 16% ocular or nasal discharges. Human–animal interactions also raised concern, with 35% of handling observed as rough and 26% of horses showing negative responses during approach tests. Overall, while body condition and owner engagement were positive, the contrast between owner perceptions and observed welfare highlights key gaps in awareness. Improving water access, shade provision, harness management, and human–animal interactions through targeted education and coordinated efforts could significantly enhance the welfare of these horses.

Lay Message Working horses are very important for many families in Bishoftu, Ethiopia, where they are used to pull carts for transport and income. This study looked at the health and welfare of horses and asked owners about their knowledge and management practices. Most horses were in good body condition and owners often seek help from SPANA or government veterinarians when problems occur. However, several welfare concerns were identified. Horses were rarely provided water during work, 92% had no shade, and many had skin injuries caused by harnesses. Improving access to water, building shade and better harness design could improve horse welfare.

Implementing a compassionate handling project to improve the welfare of working equines in Senegal

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In Senegal, 565,000 draught horses support the society and economy through their work in transport and agriculture, yet their welfare is frequently compromised by inhumane handling and poor human-animal interactions. Practices involving punishment, violence, or restriction of natural behavior (rolling, grazing, interaction with conspecifics) result in animals displaying fear, apathy, aggression, and experiencing long-term trauma. To address these challenges, Brooke West Africa launched a Compassionate Handling Project in 2022, aiming to reduce the prevalence of harmful handling and improve human animal interactions through capacity building and human behavior change. An initial diagnosis identified a sample (n=225) of horses displaying challenging behaviors, documented the behaviors and context, and determined likely root causes. Community agents were subsequently trained in techniques aligned with Least Invasive, Minimally Aversive (LIMA) principles, incorporating welfare, health and nutrition management, environmental modification, positive reinforcement, counter conditioning, and systematic desensitization. 72 Agents then received ongoing mentoring to develop and implement behavior change strategies. Motivational interviewing was included to support sustainable behavior change. Progress was measured using quantitative indicators from SEBWAT (observer approach, chin contact) and Brooke's Equine Welfare and Owner Behavior (EWOB) tools, alongside detailed case studies. The main challenging behaviors recorded were aggression (biting, kicking), refusal to work (pull the cart or agricultural machinery), and fear of humans.

Between 2022 and 2025, 70% of cases were completely resolved, and the challenging behavior disappeared. Of these, 29% only required management and environmental modification, while 71% needed positive reinforcement, systematic desensitization, or counter conditioning. 79% of owners positively changed their behavior, demonstrating more compassion and a better understanding of horses' emotions. Compassionate handling, delivered through a community-based model grounded in competency, motivation, and human behavior change, can be a powerful tool to improve the welfare of working equines. We are now exploring replicating this model in other contexts.

Lay Message In Senegal, many draught horses suffer because of harmful handling practices, including violence, punishment, and restrictions. To remedy the situation, Brooke West Africa launched a Compassionate Handling Project aimed at improving human-animal interactions and, ultimately, the welfare of horses. Using human behavior change approaches, we supported the owners of 225 horses displaying challenging behaviors to make improvements to their horses' management and environment and use equine education techniques when needed. In 70% of cases, the challenging behavior disappeared, demonstrating that Compassionate Handling and Human Behavior Change are powerful drivers of change for improving the welfare of working horses.

Measuring and improving human–animal interactions: Developing and validating the compassionate handling mentoring framework for working equids

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An estimated 116 million working equids support human livelihoods worldwide, yet harmful handling practices frequently compromise their welfare. To improve the assessment of handling quality under low-resource field conditions, Brooke, an international equine welfare organisation, aimed to develop a practical method for evaluating human–animal interactions. A review of scientific literature and practices implemented across the wider animal-welfare sector was combined with iterative design involving Brooke's International Compassionate Handling Senior Training Team. Using focus groups, workshops, and structured feedback, we produced the Compassionate Handling Mentoring Framework (CHMF), a work-based assessment and mentoring toolkit grounded in five core competencies: animal welfare advocacy; expert interpretation of equine behaviour; proficiency in handling protocols; effective communication; and ethical, reflective practice. The CHMF includes detailed criteria indicating competence and a scoring rubric, with trained mentors conducting observational assessments during handlers' routine activities. Resulting scores are used to track progress and guide improvement. The CHMF was piloted in Senegal with Brooke staff, partners, and equid owners (n=72). Mixed methods evaluation demonstrated good acceptability, usability, and face validity. CHMF measurements were associated with corresponding measures from other monitoring tools. For example, our Equine Welfare, Owner Behaviour, and Livelihoods tool showed the proportion of participants exhibiting compassionate handling practices increased from 53% in 2024 to 83% in 2025. The CHMF data aligned with this and enabled more detailed analysis, for example indicating the proportion of handlers applying appropriate behaviour modification techniques rose from 58% to 89% and those who offered timely, appropriate, and consistent reinforcement from 60% to 96%. Qualitative findings from interviews and focus groups further indicated improved human–equid interactions, including in complex trauma and rehabilitation cases. Next steps include further validation across different contexts and strengthening feedback systems to support mentoring, alongside exploring long-term skill retention and how the framework can support this.

Lay Message Working equids often experience poor handling, affecting their safety, comfort, and wellbeing. Brooke, an international equine welfare organisation, aimed to identify the skills needed for compassionate, effective handling and how to assess these in working conditions. We developed the Compassionate Handling Mentoring Framework (CHMF), a practical toolkit to assess the quality of equine handling and identify steps for improvement. The framework outlines five core competencies: animal welfare advocacy, understanding equine behaviour, skilled use of handling methods, effective communication, and ethical practice. It supports mentoring, tracks progress, and promotes improved wellbeing for working equids and the people who depend on them.

How harness racing trainers and drivers conceptualise driveability: Insights from qualitative interviews

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Background: Harness racing, like other equestrian sports, faces ongoing questions regarding how horse welfare is safeguarded in training and competition. Welfare concerns are closely related to the driver–horse interface, where communication is primarily mediated through reins, bits, and other equipment. Consequently, improving horse welfare may depend on understanding how industry professionals conceptualise optimal responsiveness and communication in the trotting horse. Within harness racing, these qualities are often referred to as driveability. However, the concept has received little scientific attention. Objective: This study explored how experienced harness racing trainers and drivers conceptualise driveability and how they relate it to performance, welfare, equipment, and rein tension. Methods: Semi-structured interviews were conducted with eight Swedish harness racing trainers and drivers. Data were analysed using reflexive thematic analysis within a critical realist framework. Results: Three themes were generated: (1) Calm training is key, (2) One cannot always influence driveability, and (3) Equipment is a tool. Participants described a driveable horse as calm yet alert, responding promptly to the driver's signals. Progressing slowly in training and working at low intensity were viewed as central to developing and maintaining driveability while supporting both welfare and performance. At the same time, participants emphasised limits to their influence, noting that temperament, biomechanics, and external factors may affect driveability. Equipment was framed as a tool for influencing driveability and performance, particularly through rein tension, which provides control as well as information about the horse's physical ability and mental state.

Conclusions: Practitioners conceptualised driveability as an emergent property of the horse–driver dyad shaped by training, temperament, and context. These findings suggest that framing driveability as a relational and communicative process may help bridge welfare and performance considerations in harness racing practice.

Lay Message This study explored what experienced Swedish harness racing trainers and drivers mean by a horse being easy to drive, or "driveable." Interviews with eight trainers and drivers showed that they saw a driveable horse as calm and responsive to the driver's signals. They believed this is best developed through calm training, which also supports the horse's welfare and performance. Equipment was described as a tool for influencing driveability and performance, but participants also said that temperament and situation can affect how driveable a horse is. Overall, driveability was understood as something shaped by the horse, driver, training, and context.

Adaptive asymmetry in sport horses: A neuromechanical framework for interpreting lateralised locomotion

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Asymmetry in horse movement is often viewed as dysfunction, but new neuromechanical evidence suggests lateralized patterns may be task-optimized rather than faulty. This study investigated whether locomotor asymmetry in athletic Quarter Horses reflects pathology, incidental variation, or a consistent motor solution shaped by discipline-specific training. Ninety Quarter Horses (30 barrel racing, 30 reining, 30 ranch sorting) underwent inertial sensor–based gait analysis (200 Hz) at walk and trot, yielding more than 7,000 high-quality strides. Metrics included stride timing, vertical acceleration, axial modulation (Mindiff, Maxdiff), and limb excursion. Laterality was quantified using the Symmetry Index (SI), Asymmetry Ratio (AR), and absolute side differences (Δ). Linear mixed-effects models assessed discipline, gait, and interaction effects, while morphometric predictors were explored using PCA, PLSR, and Elastic Net. Asymmetry was not random: each discipline showed a repeatable neuromechanical signature, with discipline explaining a substantial proportion of variance in key asymmetry metrics (η^2p up to 0.46). Barrel horses had a lower duty factor and reduced axial displacement, consistent with energy-efficient projection. Reining horses showed higher Mindiff (+27.4%) and Maxdiff (+33.8%), reflecting refined postural modulation during decelerative work. Ranch sorting horses had the highest Δhind values (+22.3%) and the largest hindlimb acceleration amplitudes (+19.6%), indicative of rapid redirection and agility. Morphometric traits accounted for only a modest share of this variability (R^2test ≈ 0.09–0.18). Although the present data do not establish diagnostic thresholds, repeatable discipline-related patterns may differ conceptually from more variable or compensatory asymmetries associated with pain or pathology. These findings indicate that functional asymmetry in trained horses is an adaptive property of the motor system, emerging from repeated exposure to discipline-specific mechanical demands.

Lay Message Uneven movement in horses is often viewed as lameness, but this study suggests that, in trained Quarter Horses, some asymmetries may reflect normal adaptation to specific athletic tasks. Horses from different disciplines showed consistent movement patterns linked to training demands rather than injury. Although this study does not define diagnostic criteria, repeatable discipline-related. Although this study does not define diagnostic criteria, repeatable discipline-related asymmetries may differ from the more variable compensatory changes often associated with pain or pathology. Recognising these patterns may improve interpretation of equine movement, help avoid unnecessary interventions, and support more targeted training and welfare-oriented management.

Beyond management: Resolving equine stereotypic behaviours through memory reconsolidation

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Equine stereotypic behaviours are widely recognized indicators of compromised welfare. Prevention through appropriate management and housing remains essential; however, once established, these behaviours often persist even when conditions improve, suggesting the involvement of durable learned models. This study investigates memory reconsolidation (MR) as a neuroscience-based intervention targeting the learned models underlying stereotypies. Stereotypies may emerge as adaptive responses when chronic stress exceeds coping capacities. Under restrictive conditions, equids may consolidate learned models in which repetitive motor patterns contribute to the modulation of stress regulation. Neuroscience indicates that such learned models can become labile upon reactivation and be updated through prediction error, enabling durable behavioural change. We applied the Therapeutic Reconsolidation Process, operationalized in equids as Equine Memory Rewriting (EMR©), to target these learned models. The intervention involves: (1) activation of the target learning, (2) introduction of a contradictory experience generating prediction error, and (3) repetition of this mismatch to enable reconsolidation of an updated, adaptive model. Interventions were conducted within the equids' tolerance thresholds, relying exclusively on ethologically coherent, non-coercive interactions. A detailed case involved a 10-year-old mare with a six-year history of stall weaving, which ceased after five sessions, with improvements in behavioural and autonomic indicators and no relapse over three years. Replication in 22 additional horses presenting locomotor or oral stereotypies yielded 25 targets showing complete cessation of the behaviour (two equids presented more than one stereotypy), with a mean of 3.8 sessions (locomotor) and 4 sessions (oral) to cessation. Relapse occurred only when husbandry conditions deteriorated post-intervention (3 cases). These preliminary findings suggest that stereotypic behaviours resistant to changes in husbandry conditions may be reversible through targeted MR. This approach complements, rather than replaces, management strategies. Limitations include the absence of controlled comparisons and potential interactions between intervention, individual variability, and environmental conditions.

Lay Message Some horses develop repetitive behaviours like stall weaving or crib-biting when chronic stress overwhelms their ability to cope. Good care and prevention are essential to protect their welfare. However, once these behaviours are established, they are usually considered permanent and simply managed. This presentation suggests that change is possible. Based on findings from neuroscience, we applied memory reconsolidation, a natural process through which the brain can update learned responses. In one detailed case and 22 additional horses, stereotypic behaviours stopped after an average of four sessions, with no relapse during follow-ups lasting up to three years under proper welfare conditions.

Are all scratches good scratches? How horses perceive scratching from owners vs strangers

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Equine welfare research is often focused more on negative aspects such as stress, pain or isolation. While these topics remain important to resolve, positive welfare is equally important to promote; how can we make horses' life more enjoyable. We aimed to study whether horses perceive a short scratching session by humans positively, and if it matters if the human is familiar or not. We also aimed to assess whether horses' use affects their emotional response.

We tested 19 horses: 13 privately owned and 8 riding school horses. All horses were subjected to three treatments over three different days: 1) scratching by a familiar person, 2) scratching by an unfamiliar person and 3) control treatment (no scratching), thus acting as their own controls. Horses were kept in stalls without food or physical contact to other horses for the duration of the test (30 min). Saliva was collected after a 15-minute settling period. After the first sample horses were scratched for 5 minutes either by a familiar person or a stranger. Another sample was collected 10 minutes after the scratching ended. Saliva samples are analysed for oxytocin, cortisol, alpha-amylase and butyrylcholinesterase. Behaviour was assessed continuously from video recordings, including possible stress indicators (head shaking, pacing, blink rate), signs of relaxation (drooping lover lip, closed eyes), enjoyment (stretching neck and upper lip) and how much physical contact the horse initiated.

Preliminary results from the behaviours using a linear mixed effects model shows, that private horses initiated more contact with the scratchers than school horses ($p=0.04$). Scratching from familiars produced more stretching of the neck ($p=0.03$) and upper lip ($p=0.004$) than scratches from a stranger. Horses also had a lower blink rate with familiars compared to the other treatments ($p=0.03$). Analyses for the biomarkers are still ongoing, results will be presented at the conference.

Lay Message Horses spend a lot of their time with humans, but we do not fully understand how they view interactions with humans. We tested how horses responded to what we assume to be a positive interaction with a human, gentle scratching. We looked at the horses' behaviour and hormonal changes to see if they found this interaction to be positive. We tested whether horses prefer scratches from their owner compared to a stranger, and if differences in their management affected the response. Horses showed more signs of enjoyment with their owners and privately owned horses showed more interest in humans overall.

Abstracts

Poster presentations

 # is the number of the poster on display in the poster room

#1 Behavior in focus: A drone video-based behavioural ethogram of rewilded horses and its use in nature conservation

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Since the publication of the first comprehensive equine ethogram in the 1970s, horse behaviour has predominantly been documented through written descriptions, illustrations, and still images. Although foundational, these approaches limited precision, contextual clarity, and the dynamic representation of social interactions, constraining their application in both behavioural research and practical management. More recently, a video-based ethogram developed for social behaviour of domestic horses has enabled more detailed, and standardised documentation of behavioural expressions. However, comparable video-based ethograms for horses living under wild, wild-kept conditions remain lacking.

This study addresses this gap through the development of a systematic video ethogram of rewilded horses (*Equus ferus caballus*). Behavioural observations were conducted through standardized drone-flights, recording repeated 5-minute video-sequences on a total of 337 horses in wild-kept conditions on 18 study sites in Denmark. Using established domestic-horse ethograms as a reference framework, we documented the behavioural repertoire of rewilded horses. To recognise distinct behaviours from drone footage, we adapted a machine learning (ML) approach using the BehaveAI software for behavioural recognition and classification. Using 10% of the video-recordings as training data, we identified 35 distinct behavioural categories. By providing our ML algorithm for use in behavioural quantification, this work assesses the transferability and ecological validity of existing ethograms for use in wild-living populations, while also providing ready-to-use computer vision model for quantifying the behaviours. The resulting video-based resource provides a tool for advancing the study of equine behaviour in natural grazing and rewilding systems and contributes to a more context-sensitive understanding of horses living in conservation-oriented environments.

Lay message Video-based ethograms are powerful tools for documenting and understanding horse behaviour, as they allow behaviours to be observed dynamically and in context. While such tools have recently been developed for domestic horses, comparable video-ethograms for horses in wild-living conditions are still lacking. In this study, we created a video-based ethogram of rewilded horses by systematically recording and categorising their behavioural repertoire, with particular focus on social interactions such as affiliative and agonistic behaviours. This visual resource supports clearer interpretation of horse behaviour in naturalistic management and conservation settings and improves communication between researchers and practitioners.

#2 Ecosystem restoration potential of equine farms – development of a practical and scalable framework supporting the EU Restoration Law

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Agricultural land covers more than 45% of the European Union's territory and therefore strongly shapes biodiversity outcomes across Europe's human-dominated landscapes. The recently adopted European Union highlights the urgent need to expand restoration opportunities on private land. Within agricultural systems, the equine sector represents a substantial land-use type in Central Europe, with 2.3 million horses across 87,000 equine facilities in France and Germany alone. Large-scale equine farms may offer particularly high restoration potential, as they are often less intensively managed and can retain semi-natural habitats. However, identifying their strengths and weaknesses for biodiversity protection requires a systematic assessment framework.

Here, we present a Restoration Potential Index (RPI) for equine facilities that integrates patch-scale habitat heterogeneity, connectivity, ecosystem quality, topographic variation, indicator species richness, and the size and proximity of semi-natural habitats into a standardized measure assessed at three spatial scales. We applied the RPI to four case-study areas in Germany, Austria, Hungary, and France, differing in habitat heterogeneity and naturalness but comparable in management and climatic conditions. The RPI revealed clear contrasts in restoration potential among sites. The Hungarian site scored highest for within-site heterogeneity, habitat-quality, connectivity, and species richness (all values of 5), indicating strong restoration capacity. The French site showed low topographic variation (1) but high internal habitat connectivity (5), highlighting compensatory effects among indicators. The German and Austrian sites showed intermediate to lower scores, except high topographic variation in Austria (5), suggesting targeted restoration opportunities. Surrounding landscapes had lower connectivity and fewer near-natural areas, underlining the importance of equine facilities as biodiversity hotspots in intensively used agricultural regions. As a transparent and scalable tool for evaluating the restoration potential of equine farms across Europe, we propose the index to promote the involvement of private land in ecosystem restoration and rewilding, supporting the EU Nature Restoration Law.

Lay message The EU Nature Restoration Law calls for large-scale ecosystem restoration across Europe, especially on farmland, which covers 45% of EU territory. Horse farms – a considerable land-use system in Central Europe – may offer strong restoration potential because they are often exempt from production pressure and retain semi-natural habitats. Here we developed a Restoration Potential Index (RPI) to assess which farms best support biodiversity. The index combines habitat diversity, connectivity, ecosystem quality, landscape features, and species presence. Tested in four European regions, it identifies strengths and limitations of sites and could guide future agri-environmental funding to support nature restoration.

#3 Horses' reactions to different scents, including wolf faeces under controlled conditions

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Horses discriminate between odours of different biological relevance, as reflected in differences in exploratory behaviour, potentially leading to variation in approach latency, sniffing duration, and frequency of investigation. To investigate this, we conducted a controlled study with 20 horses tested in their stables. The order of horses was semi-randomised. Each horse was first presented with a container of oats (phase 1), then a similar container with a smaller container inside containing one of three scents: musk oil, thawed pig or wolf faeces (phase 2) and finally with oats again (phase 3). Each phase lasted three minutes. Each scent was tested separately on different horses. Behavioural responses were analysed using generalised linear mixed models. The latency to approach the container was significantly affected by scent ($F=3.84$, $p=0.042$) and phase ($F=15.06$, $p<0.001$). Post-hoc comparisons revealed that latency was shorter in musk oil compared to pig faeces (Tukey-adjusted $p=0.041$), whereas for wolf faeces, it did not differ significantly from the other two conditions. Approach latencies were longest in phase 1 (10.1 ± 2.1s) and decreased significantly in phase 2 (2.6 ± 0.5s) and phase 3 (3.4 ± 0.7s; phase 1 vs 2: $t=5.21$, $p<0.0001$; phase 1 vs 3: $t=4.15$, $p=0.0006$), indicating faster approach over successive exposures. The number of approaches to the container in phase 2 did not differ significantly between scent conditions ($F=1.17$, $p=0.334$). Overall, the predator-related odour had no detectable effects on horse behaviour under conditions where feeding motivation and prior exposure are present. Despite exposure to potentially aversive scents (wolf and pig faeces), horses continued to approach the container. This may demonstrate that the strong motivational drive to feed can override mild avoidance responses and that horses are evolutionarily adapted to balance feeding and vigilance, rarely abandoning food unless a danger is imminent.

Lay Message Odours of different biological relevance may induce differences in exploratory behaviour in horses. To test this hypothesis, we studied 20 horses. Each horse first received a container with oats, followed by an identical container paired with one of three scents: musk oil, pig faeces, or wolf faeces. We recorded how often horses approached the container and how long they took to approach it. Horses approached the container equally often in all scent conditions. Approach time was slightly longer with pig faeces than with musk oil, while wolf faeces did not increase approach time.

#4 What the nature of horses demands: Equine dissent and the limits of partnership

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Empirical literature increasingly correlates equine avoidance and refusal behaviours with nociception, negatively valanced affective states, or confusion from misapplied training principles. Yet, prevailing paradigms routinely misattribute these behaviours to disobedience, justifying responses of dismissal, override, and punishment. These interpretive frameworks create conceptual inconsistencies and welfare concerns that have received limited attention in equitation science. If the nature of the horse includes the capacity to behaviourally communicate aversion, then frameworks that render that communication illegible represent a failure of both welfare and ethological recognition. This research investigated how cultural and institutional structures obscure the communicative and ethical significance of refusal, and what this implies for claims of mutuality and cooperation central to the ideal of partnership. The methodology integrated philosophical conceptual analysis with empirical research from ethology, welfare science, and human-animal studies to critique existing norms around behavioural interpretation. Drawing on relational accounts of agency, the analysis distinguishes refusal from dissent. Refusal describes observable expressions of resistance or withdrawal. Dissent denotes the subset of refusals, such as those driven by pain, that should function as a limit on human action, rendering continuation of the contested activity impermissible. The contextual analysis examined how knowledge deficits, anthropomorphic labelling, and training norms systematically reclassify indicators of pain and aversion as characterological defects. The synthesis showed how these interpretative frameworks foreclose investigation of underlying causes, justify escalation, and render dissent illegible as communication. The thesis concludes that recognising equine behavioural capacities is insufficient if the structures that systematically misclassify those behaviours remain unexamined. Understanding the nature of the horse requires identifying not only what refusals indicate, but why they are suppressed, and when they ought to limit human action. In practice, centring the horse's communication enhances training safety and welfare assessments, and grounds the partnership ideal in practices that preserve, rather than silence, communication.

Lay Message When horses resist, science often points to pain or fear, yet the equestrian world frequently dismisses resistance as disobedience. This research argues that under specific conditions, a horse's refusal should be treated not as a behavioural problem, but as a boundary to respect. It examines why practitioners often struggle to recognise this meaningful communication, finding that deeply embedded training traditions, cultural norms, and biased language prevent us from hearing what horses tell us. If we truly consider horses our partners, we must take them seriously when they say no.

#5 No good option: A teleonomic account of conflict behaviour in ridden horses

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Bucking, reefing the reins, or kicking out at leg cues have been labelled conflict behaviours. In equitation science, these are identified as resulting from motivational conflicts arising from competing goals in situations of uncertainty. In equitation, the reliance on aversive equipment and inherently aversive environments can generate avoidance-avoidance conflicts, where the horse is motivated to escape two aversive conditions simultaneously, but is prevented from resolving either. The teleonome reveals that such behaviours occur when the horse's current experience is in conflict with its evolved regulatory systems. Each horse's teleonome is an integrated system of perceptual, cognitive, behavioural, physiological, affective, and adaptive capabilities shaped by evolution and refined by individual experience. It operates through continuous cycles that Detect and Evaluate change, Forecast and Respond with actions predicted to support biological viability. During riding, the horse's internal and external experiences may conflict with the teleonomic need to avoid pain and threats, or to achieve biologically relevant goals. These goals have traditionally been framed as three Fs: Forage, Friends, and Freedom. We propose a fourth F, Feeling Safe, as an equally fundamental teleonomic need. The aversive characteristics of stimuli used in negative reinforcement, such as bits and spurs, alongside environmental stressors such as social isolation, directly undermine this fourth F and underpin behavioural attempts to restore teleonomic coherence. Conflict behaviours should be considered evidence of misalignment between the equine teleonome and the horse's current experience. However, compliance or a lack of overt conflict behaviour is not necessarily evidence of consent or positive welfare, it may instead reflect the horse's forecast that adaptive behaviour will not restore teleonomic coherence. Applying teleonomic thinking to unwanted behaviour in ridden horses reveals the likely causes of conflict behaviour, and informs training and management strategies that prioritise enabling them to achieve all four teleonomic goals.

Lay Message Horses that buck, rear, or resist are labelled as being in conflict with the rider. These behaviours are evidence of the horse's attempts to resolve conflicts between its current experience and its biological needs, like escaping pain or fear. Horse welfare is framed around three Fs: Forage, Friends, and Freedom. We propose a fourth F, Feeling safe, as equally fundamental. Eliminating conflict behaviour does not guarantee horses' needs are being met. Viewing unwanted behaviour through a teleonomic lens: the horse's evolved wants and needs, can help diagnose underlying causes and identify training and management approaches that address all four Fs.

#6 Straight out of the horse's mouth! Social media discourse reveals polarisation of views on horse welfare

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High profile equestrians bring attention to equestrian sports, setting an example for equestrian norms and influencing public perception of horse sports. Social media is a growing influence in this context, and may invoke strong emotional responses. The present instrumental case study considers two controversial incidents shared across social media. One features an elite equestrian striking at a horse 24 times with a long whip. The second scenario shows a high-profile rider whipping and spurring a horse for a jump refusal during an international showjumping competition. We collected and anonymised 416 comments made in response to the case videos posted on Facebook and Youtube between August 2024 – May 2025. Using qualitative discourse analysis, we aimed to describe: 1) how individuals respond to the potentially welfare compromising actions of high-profile equestrians; 2) what the responses tell us about people's attitudes towards performance horses and their welfare; and 3) what we can learn about the social construction of animal welfare. Two polarised discourses were interpreted encompassing: the equestrians in the videos, the horses involved, the practices observed, and ramifications on the industry. One discourse focused on defense of the equestrians and the industry. Whip use seen in the case videos was justified through trivialisation and reframing of both the practice and the horse's experience. The opposing discourse was empathetic towards horses and highly critical of the equestrians, whip use, and the horse industry. We interpreted some aspects of the discourse as moral disengagement strategies prompted when individuals are confronted about common industry practices, such as whipping. We also suggest that the discourses reflect tribalism, potentially underpinning polarised perspectives interpreted here. These findings may contribute to a better understanding of the horse industry and support diverse perspectives in working together to bring about improvements in practice that better respect the nature of the horse.

Lay Message High-profile riders influence how people see horse sports and what is considered "normal" treatment of horses and social media provides a window into equestrian practice and culture. In this study, we analysed 416 social media comments in response to two potential horse welfare compromising scenarios. Some people defended the riders and the industry, downplaying the horse's suffering and justifying whip use. Others strongly defended the horses and condemned the riders and the sport. These opposing "sides" show how group loyalty and moral disengagement shape discussions of what is best for horse welfare and pose a barrier to improved horse welfare.

#7 From restraint to relationship: A species-centred framework for handling wild and domestic equids

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Handling wild or unhandled equids is widely considered high risk. In zoo, conservation and management contexts, sedation, restraint and physical containment are commonly used to perform routine procedures. While these approaches may allow tasks to be completed, they can negatively affect the animal's emotional experience and contribute to escalating handling difficulties over time. These challenges often arise when handling practices fail to align with the nature of horses as social, mobile prey animals. This study investigated whether handling risk can be reduced using a welfare-centred, relationship-based framework that integrates species-typical behavioural needs of horses (telos) with the individual perceptual experience of each horse (umwelt). The Holistic Equid Learning Plan was developed as a practical framework to guide low-stress human–equid interactions. The model operationalises these principles through four interacting pillars: safety, trust, communication and confidence. Together these elements form the HELP Wheel, a structured planning tool designed to support cooperative care and voluntary participation in handling procedures. A case-based iterative approach was used to develop and evaluate the framework across three contrasting contexts: a zoo-kept takhi (Equus ferus przewalskii), a free-living conservation-grazing pony, and a domestic gelding with a history of fear-based handling responses. Observational data were collected through video recordings, field notes and collaborative debriefs with caretakers. Behavioural indicators including proximity tolerance, postural relaxation and voluntary engagement were assessed qualitatively. Across all cases were successfully completed without sedation or physical restraint. Horses voluntarily participated in procedures that previously required restraint or sedation, showing increased proximity tolerance and reduced behavioural signs of stress. These findings suggest that handling strategies grounded in the behavioural nature and individual experience of horses may reduce handling risk while promoting positive welfare outcomes. The framework aligns with the Five Domains model of animal welfare, particularly Domain 4c concerning human–animal interactions.

Lay Message Handling fearful or unhandled horses often relies on restraint or sedation. This study shows that when handlers consider both the natural behaviour of horses and the individual experiences of each horse, routine procedures can be carried out without force, improving safety and welfare for both horses and people.

#8 When a line has been crossed: Exploring horse owners' emotions, behaviours, and self-management when experiencing unwanted equine behaviours

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Behaviours considered "unwanted" in horses may represent normal equine responses that are undesirable to humans, learned behaviours, or expressions of negative affective states such as fear, frustration, or stress. These behaviours can affect welfare and the horse–human relationship. This study investigated how owners perceive unwanted behaviours, to identify strategies for earlier recognition of equine stress. This qualitative study triangulated 22 interviews with diverse horse owners, 31 clinical histories from equine behaviour consults, 12 days of observations at equine events, and 17 forum discussion threads. All data were analysed using a Grounded Theory methodology. Here, we explore a particular component of the wider dataset: owner emotional experience of managing unwanted behaviours. This involved two key themes: "crossing the line", and "recalibrating emotional capacity". "Crossing the line" explores how a behaviour was constructed as unwanted when it crossed from being perceived as "normal for the horse", to causing owners to feel fear, frustration, or loss of control. Owners' perception of the of behaviour was therefore inextricably tied into the human experience of a boundary having been breached. "Recalibrating emotional capacity" explores how owners managed the residual emotion experienced during the initial boundary-crossing, as well as ongoing fear, anxiety and frustration. This experience could be profound and often involved socially situated emotions such as embarrassment and shame. Owners frequently described renegotiating their sense of self, their support network, and/or rebuilding their emotional capacity as an integral part of the horse's behaviour resolution. Human emotional experience has been little explored in the literature around unwanted horse behaviours, yet this study highlights the emotionally complex nature of these experiences, thus shaping how humans respond to the unwanted behaviour. Understanding owners' experience will help improve interventions and communication around equine behaviour, improving welfare of both humans and horses.

Lay Message "Unwanted" behaviours in horses, such as aggression, occur for many reasons, including learnt behaviours and negative emotions such as fear. These behaviours affect horse welfare and the relationship between horses and their owners. This study explored how owners interpret these behaviours using interviews, behaviour consultation records, observations at equine events, and online discussions. Owners often described a moment when a behaviour "crossed the line" from manageable to frightening or overwhelming. Many reported ongoing emotions such as fear, frustration or shame, and the need to rebuild confidence. Recognising owners' emotional experiences may help improve welfare outcomes for both horses and people.

#9 After the last Race: A preliminary welfare evaluation of retired racehorses in Malta

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The welfare of racehorses after retirement is a growing global concern. In Malta hundreds of horses retire annually and follow different post-career pathways, including work as urban carriage horses, transfer to private owners abroad, or placement in local NGOs. However, no systematic data have described their post-retirement conditions. As former racehorses may experience changes in management, workload, and environment, evaluating their welfare after racing is essential. This study assessed the welfare of retired racehorses through evaluation of housing, feeding, health, behavior, management, and caretaker expertise. A convenience sample of 30 retired Standardbred geldings (8–28 years), identified through private owners, and NGOs. Feeding included hay, concentrates, vitamins, and electrolyte supplements. Feed storage was adequate, and all horses had an optimal body condition score (BCS = 3). Water was provided via buckets only, raising concerns regarding availability and cleanliness. Regarding housing, 33% of horses had access to walk-in/walk-out loose boxes with paddocks, while 67% were kept in 3 × 3 m^2 individual loose boxes compliant with Maltese law but potentially suboptimal for welfare. Horses were typically stabled for most of the day, with exercise limited to road work for approximately one hour once or twice weekly. No environmental enrichment was provided, and bedding consisted of shavings on concrete floors without mats. Minor health issues included injuries (3%), tack- or rug-related lesions (3%), and skin disorders (7%). Additional issues reported over the past year included skin problems (7%), fractures (3%), blindness (3%), low BCS (3%), and overheating (3%). Physiological parameters were within normal ranges. Positive welfare indicators, including mutual grooming and positive human interaction, were observed in 97% of horses, and no stereotypic behaviours were recorded. Overall, welfare appeared satisfactory; however, improvements in space allowance, water provision, and exercise opportunities are recommended. This study provides initial evidence on the welfare of retired racehorses in Malta

Lay Message This study highlights the importance of ensuring good welfare for racehorses after their racing careers end. The findings show that, overall, retired racehorses in Malta are generally well cared for, with adequate feeding, acceptable health, and positive interactions with humans. However, some aspects of their management could be improved to further enhance their quality of life. Increasing space for movement, providing environmental enrichment, ensuring consistent access to clean water, and offering more regular exercise would benefit these horses. The results provide valuable information for caretakers to help improve post-retirement care practices and support the long-term welfare of retired racehorses.

#10 The TRUSTED resources support proactive owner-vet decision-making about equine end-of-life care

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End-of-life decisions often cause horse owners anxiety and uncertainty, contributing to delayed euthanasia. Earlier owner-vet discussions about quality of life (QOL), emergencies, and end-of-life care could facilitate timely health interventions and decision-making, decreasing owner stress and improving equine welfare. This study explored owners' experiences of developing QOL, emergency, and end-of-life care plans, with veterinary support and novel resources. The TRUSTED resources (available physically and digitally) were trialled by horse owners (n=29) and their veterinary surgeons (n=15) across three UK practices. They support collaborative decision-making about care throughout horses' lives. They consist of an informational guide comprising six stages: Think Ahead, Review Your Options, Understand and Process, Share the Decision, Treatment Plan, Euthanasia Plan, Dealing with Difficult Feelings (TRUSTED), and a plan to record preferences. Owners then participated in in-depth semi-structured feedback interviews. Content and thematic analysis were conducted. Owners felt they knew their horses well, valuing this during decision-making. Nevertheless, they feared making a euthanasia decision at the wrong time and that their horses might suffer. Owners reported the resources helped structure their thoughts, and appreciated discussing euthanasia and QOL before a euthanasia decision was imminent. This allowed them to feel more comfortable asking questions and could reduce anxiety surrounding end-of-life. Many reported beginning or improving QOL monitoring, and increased confidence in identifying health changes. Reluctance to discuss end-of-life was the most cited potential barrier to the resources being adopted more widely. The TRUSTED resources facilitate earlier owner-vet conversations about end-of-life. This helps owners feel more prepared and encourages proactive QOL monitoring, increasing opportunities for earlier intervention in declining welfare and reducing the likelihood of decision-making delays. Normalising pre-emptive discussions about end-of-life between horse owners and their veterinary surgeons could reduce emotional avoidance of this topic. Wider implementation of the TRUSTED resources has the potential to contribute towards this shift.

Lay Message Euthanasia is upsetting for horse owners, so they may put off thinking about it. However, this can result in the horse suffering. Novel resources, designed to support communication and decision-making about equine health and end-of-life, were trialled with owners and their vets. Owners gave feedback during interviews. They liked the resources' structured approach, and that they prompted detailed discussions with their vet, which helped reduce uncertainty. Many owners also adopted recommendations for tracking their horse's health. Encouraging equine practices across the UK to adopt these resources could help to make earlier conversations about euthanasia a normal part of veterinary care.

#11 Incidents and injuries among humans related to the horse's housing system

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Housing horses in loose housing is becoming more popular and is considered to lead to more manageable and more sociable horses as they have several of their basic needs met. At the same time, riding and handling horses are associated with high injury rates and can also lead to death. Also, handling horses in groups are associated with risk. The aim was to compare accidents among humans depending on the housing of the horses. The current research question was whether the horse's housing system was associated with the prevalence of personnel injuries during daily horse management or riding and driving. Confidential incidents reports, n = 420, were collected over a one-year period from three national equine centres reported mandatory to each administration. These facilities housed a total of 300 horses distributed across three housing categories: loose housing (18%), individual boxes with daily group turnout (73%), and individual boxes with daily individual turnout (9%). The collected incident reports were categorized according to housing system, type of activity (daily horse management; riding or driving; farriery), and type of event (serious injury; minor injury; incident). The risk of accidents in relation to housing system was analyzed using the chi-square (χ^2) test. The result based on 297 incident reports related to the horses housing system (0.3% serious injuries, 4.2% minor injuries and 95.6% incidents) showed no relationship between type of incident report in relation to the number of horses in each housing system (p=0.99) or type of activity: daily horse management (p=0.99), riding/driving (p=0.99) or farriery (p=0.99). The housing system did not appear to affect the risk of incidents or injuries to humans in connection with daily management and use of horses at these equine centres. The centres applied well-established safety routines, supported by long-term use of incident reporting systems to minimize risks.

Lay Message Keeping horses in open group housing (“loose housing”) is becoming more common and is often believed to improve horse behaviour. However, horse handling and riding can involve injury risks. This study examined whether the way horses are housed affects accident rates for people. Over one year, 297 incident reports from three national equine centres (300 horses) were analysed. Accidents were compared across different housing systems and activities. The results showed no difference in the number or severity of incidents related to housing type. Good safety routines appear more important than housing system in preventing injuries.

#12 How management practices affect the risk of colic in horses: A preliminary investigation of current literature

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Background- Equine Colic to date still possess a significant risk to horses health and welfare. Management practices, including stabling and turnout have been analysed for their association with the likelihood of colic occurring, as these management practices may restrict movement, gut motility, foraging and an increase in stress. Objective- to identify consistent themes across peer-reviewed studies that link the association between how a horse is stabled/turnout and colic occurrences in the adult horse. Furthermore, identify changes that could be made to equine management practices suggested in the studies to improve equine welfare relating to preventing colic occurring. Methods- All literature used is sourced from PubMed and Google Scholar with the criteria for inclusion in this study is contemporary peer-reviewed papers with horses of all breeds and both sexes included. This project will be mainly conducted through Thematic analysis that identifies recurrent themes across studies. Results- Preliminary thematic analysis of relevant studies have reported recurrent associations between increased stabling and reduced turnout and an overall increase in colic incidences. A chi-square goodness-of-fit test was performed to assess whether the four colic risk factors (horse turnout/pasture access, stabling, nutrition/diet management, and change of environment) were reported with equal frequency across the reviewed papers (total n=28 papers). The observed counts (6, 8, 7, and 7) did not significantly deviate from the expected equal distribution of 7 papers per factor ($\chi^2 = 0.286$, df = 3, p = 0.963), indicating no evidence of differential emphasis on any one risk factor in the literature. Conclusion- Themes that have emerged suggest that both stabling and turnout in horse management frequently become relevant in studies researching colic. This continuing analysis should map gaps in evidence and further suggest modifications that should be made to equine husbandry practices to increase future equine welfare.

Lay Message Lay persons- Colic is a common abdominal pain issue in horses that can be serious. Many recent studies look at how horses are kept such as time spent in stables versus out in fields and note patterns where more stabling or less turnout appears linked to more colic reports. Other things like feed changes, exercise, or season also play roles. Our review is gathering and organising these findings from the past decade to highlight what the studies show so far, point out where more research is needed, and suggest ways owners might adjust routines to support health and natural behaviour.

#13 Management-related psychological stressors and cardiac arrhythmia in Standardbred racehorses

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Horses are subject to physical and psychological stressors in competition. A previous study of heart rhythm in Standardbred horses during routine racing from harnessing through warmup and racing revealed complex ventricular arrhythmias (CVA) during early recovery in 16% of horses. This is a high-risk period for sudden death. Associations were identified with gait (Trotters > Pacers) and stressful race events. The present investigation used these archival data to investigate relationships between management and race factors potentially associated with stress, and post-race arrhythmia. The case-control study examined 49 CVA cases and 132 non-CVA cases. 70 exposure variables were identified including removal of tack during rest, historical racing frequency, trainer/driver and changes thereof, track familiarity, arrival time in relation to race start, quantity/intensity of warmups, rest before warmups, heart rate and indices of heart rate variability. Candidate multivariable logistic regression models were used to assess associations between groups of predictor variables and CVA. Earlier versus later races in the evening significantly interacted with time spent in pre-race housing before first warm-up (p=0.0018). Earlier races were associated with increased odds at 15 minutes (OR=4.14, 95%CI=1.16-14.78), attenuated by 30 minutes (OR=0.78, 95%CI=0.22-2.80), then odds decreased (45 minutes: OR=0.15, 95%CI=0.02-1.03, 60 minutes: OR=0.03, 95%CI=0.002-0.47). Presence of an in-race notable event was positively associated (p=0.04, OR=2.36, 95%CI=1.03-5.40). Slower speed in the final quarter mile was associated with higher probability (p=0.0106). Analysis is ongoing. Preliminary results suggest management, racing environment, and in-race circumstances may represent stress factors for racehorses and increase CVA risk. Identification of stressors could support adoption of measures to decrease stress and associated risks, and improve equine wellbeing. Realization that what we do and how we do it has tangible impacts on welfare and that some may not be benign, creates a platform for further research on identification and effects of psychological stressors.

Lay Message This study examined if potentially stressful management-related factors increased potential for heart rhythm disturbances in Standardbred racehorses. Preliminary results showed increased potential for rhythm disturbances in races earlier in the evening with less time spent in pre-race housing, and in later races with more time spent in pre-race housing – when the environment is busier. Potential for rhythm disturbance increased after unexpected in-race events or with slower speed in the last quarter mile. This suggests intervention opportunities, such as ensuring horses habituate to a calm environment before high-intensity exercise. Further understanding of management implications promotes equine welfare.

#14 Can experienced handlers predict physiological stress? Linking stress scores to serum cortisol in antivenom producing horses

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Equine stress monitoring has traditionally relied on physiological indicators, which can be costly and time-consuming. Accurate stress evaluation in horses is essential for safeguarding equine welfare and handler safety during aversive procedures. Validating observational methods may offer a practical alternative. We examined the relationship between perceived stress scores (PSS) assigned by two experienced handlers and serum cortisol (SC) concentrations in nineteen horses during the initial stages of antivenom production across nine bleeding sessions. PSS were rated on a 5-point ordinal scale (1 = very calm; 5 = very stressed), based on observable behaviors including muscle tension, evasive movements, and agitation. Due to the low frequency of scores 4 and 5, the scale was collapsed into three stress categories (Low = 1–2, Moderate = 3, High = 4–5). Blood samples for SC determination were collected immediately before red blood cell reinfusion. SC levels were measured using a chemiluminescence immunoassay. The association between PSS and SC, as well as session effects, were analyzed using a cumulative link mixed model (session and handler as fixed effects; horse as a random intercept). Differences in SC across sessions were assessed using a linear mixed-effects model (session as fixed effect; horse as random effect). SC did not predict the PSS (OR = 1.16 per 10 ng/mL increase; 95% CI: 0.94–1.44; $p = 0.173$), suggesting limited correspondence between physiological and behavioral stress indicators. Handler effect varied significantly (OR = 3.32; $p = 0.004$). PSS varied across sessions ($p < 0.001$). SC levels differed by session ($p < 0.001$), with Session 3 showing higher levels than Sessions 2, 4, 18, and 19 ($p < 0.05$). PSS weakly reflected physiological stress trends in antivenom-producing horses. However, the lack of a significant association and differences in handler scoring indicate that behavioral assessment should serve as a complementary, rather than a substitute, indicator of stress. All procedures were conducted under ethically approved conditions.

Lay Message Antivenom-producing horses undergo periodic blood extractions to harvest hyperimmune plasma. Recognizing behavioral indicators of pain or stress could enhance horse welfare. We evaluated if experienced equine handlers could recognize physiological stress through observation of these behaviors in antivenom producing horses. We compared stress scores with the levels of the stress hormone, cortisol, in serum across nine blood extractions in nineteen horses. Our results suggest that experienced handlers were unable to accurately predict physiological stress, indicating that behavioral observations alone do not reliably reflect cortisol levels and that both physiological and behavioral measures are required for a comprehensive assessment.

#15 Compassionate handling for healthcare: Translating equitation science into clinical competencies within animal health systems

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Veterinary care plays a critical role in safeguarding working equid welfare. However, handling during clinical procedures is often restraint-based, increasing fear, trauma and treatment avoidance. Equitation science provides a translational framework to improve human-equine interactions. Brooke's Handling for Healthcare implements this by framing handling as a core clinical competency, integrating holistic welfare, behavioural science and learning theory. This workstream applies a systems approach to embedding compassionate, evidence-based handling across stakeholder groups, translating principles into practice to improve equine welfare, affective experience and human-equine interactions. Training and mentoring activities, informed by Brooke's Compassionate Handling Mentoring Framework – a toolkit detailing handling competence criteria - were provided to 1,102 participants in Ethiopia and 3,870 in Pakistan, from key stakeholder groups of 1515 veterinarians and animal health professionals, and 3457 veterinary students; engagement also included owners. Strengths and weaknesses of the workstream were assessed using a mixed-methods approach. Data from Brooke's previously validated Animal Health Mentoring Framework (AHMF), which measures service provider competencies, and Equine Welfare, Owner Behaviour, and Livelihoods tool (EWOB+L), which measures animal-based indicators, resource provision, and owner capability, opportunity and motivation, were used alongside video-based behavioural case study analysis. Video-based behavioural case studies demonstrated reduced severity and frequency of fear-related behaviours during clinical procedures following training and mentoring. EWOB+L data aligned with these findings; calm and/or curious responses to assessor presence increased from 42% (2024) to 61% (2025) in Ethiopia and Pakistan. Practitioner competency scores improved; AHMF handling parameters increased from 40% (2022) to 100% (2025) in Ethiopia and from 80% (2022) to 100% (2025) in Pakistan. This work demonstrates the potential for equitation science to be implemented as a clinical competency within animal health systems. Evidence-based compassionate handling was associated with improved welfare outcomes. Translating behavioural science into veterinary practice offers a scalable pathway for sustainable improvements in working equid healthcare.

Lay Message Working horses, donkeys and mules experience fear and stress during veterinary assessment and treatment because handling often relies on physical restraint. Brooke applies principles from equitation science to improve how animals are handled during healthcare. Brooke supports veterinarians, animal health workers and owners to use more compassionate, welfare focused handling as a core clinical skill. Training and mentoring in Ethiopia and Pakistan were associated with calmer animal behaviour during treatment, improved handling competencies among practitioners and reduced restraint use. These findings support the view that compassionate, evidence-based handling can improve animal welfare and enable sustainable veterinary care for working equids.

#16 When disease becomes daily life: The quality of life of ageing horses with pituitary pars intermedia dysfunction

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For many ageing horses, chronic disease becomes daily life. Chronic conditions such as Pituitary Pars Intermedia Dysfunction (PPID) are common in older horses and may reshape daily comfort, behaviour, and affective state. Understanding how horses live with chronic disease requires moving beyond clinical markers to consider their lived experience. Quality-of-life (QoL) assessment provides a structured framework for evaluating wellbeing over time, while acknowledging that such measures rely on human interpretation of observable indicators. We investigated and monitored QoL over time and factors shaping QoL scores in horses undergoing PPID testing, using a recently validated PPID QoL assessment tool. Horse owners were recruited online, through vet referrals and enrolled at the time of PPID testing. Owners completed the QoL assessment at enrolment and every three months for up to two years. Linear mixed-effects models examined associations between QoL scores and PPID diagnosis and treatment, comorbidities and additional long-term medication use, body condition, and time, accounting for repeated measures within horses. The study included 127 treated PPID-positive horses, 33 untreated PPID-positive horses, and 77 PPID-negative horses. QoL scores did not differ between groups at baseline, however, mixed-effects modelling identified a small but statistically significant difference in QoL scores between groups ($F_{2,372.83}=6.294$, $p=0.002$) across follow-up. At seven months, estimated QoL scores were worse in PPID-positive horses (treated: EMM=0.32, [95% CI 0.30-0.34]; untreated: 0.30,[0.28,0.33]) than non-PPID horses (0.26,[0.24,0.29]). QoL scores improved slightly over time across groups ($B=-0.001$, $SE<0.001$, $t=-2.215$, $p=0.027$). Poorer QoL was also associated with additional chronic conditions ($F_{2,890.80}=3.608$, $p=0.028$), and lower body condition, with underweight horses exhibiting poorer QoL ($F_{2,828.57}=43.413$, $p<0.001$). These findings highlight the importance of considering how disease shapes the everyday lived experience of the horse, while recognising the central role of human observers in interpreting equine wellbeing. Integrating structured QoL assessment into management may support a more holistic understanding of the nature of the ageing horse.

Lay Message As horses age, many develop PPID, a common hormonal disease. While attention often focuses on blood tests and treatment, less is known about how the condition affects a horse's everyday comfort and wellbeing. In this study, owners of 237 horses completed a recently developed quality-of-life questionnaire every three months for up to two years, helping track how horses were doing over time. Horses with PPID, those with other long-term health problems, and horses that were underweight were reported to have poorer quality-of-life. Monitoring quality-of-life may help owners and veterinarians better recognise subtle changes and support ageing horses more compassionately.

#17 Not as safe as you think: Testing mechanical behaviour and injury risk of panic in equine tie-up systems used across 9,034 places

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Horse and human wellbeing and safety during routine management are influenced by the mechanical behaviour of equine tie-up systems. The aim is to quantify this behaviour and describe how it influences injury risk, equine welfare and working safety. Tie-ups were selected based on prevalence, determined via in person interviews, first-hand accident accounts collected in person, by email, video call and SoMe comments and private messages, and facility visits during 2023-2025. Through these visits to the facilities we observed, 33 nationalities of equestrians, which had a combined 9034 tie-up places. Testing used a 1000 kg overhead crane, 617.4 kg steel counterweight, and Steinberg Systems crane scale to simulate linear pull-back loading. Records were taken for peak force, elongation and failure modes, ranging from automatic release to mechanical failure or weight limits being met and reusability varying from fully reusable to irreparably damaged. Automatic release systems released predictably at lower breakaway forces 88 - 111.4 kg (863 - 1092 N), whereas elastic systems elongated substantially, reaching 150 kg (1471 N) with increased energy storage driven by elastic return to original form, a unique recoil behaviour producing release speeds of 104.4 km/h over 0.0667 seconds. The metal chain transmitted the highest peak force 593 kg (5815 N), while baling twine showed the greatest variability, 2.2 - 499 kg (21.6 - 4892 N). As expected, systems without defined performance specifications showed high variability and risk under panic-type loading. Testing confirmed this: automatic release systems behaved predictably, while all other categories demonstrated inconsistent and unpredictable failure behaviour. These findings show that many commonly used tie-up systems do not perform as expected under panic-type loading. A strong recommendation can be made for predictable automatic release systems, such as the branded Velcro automatic release systems tested, rather than trusting in something perceived to be safe and without any specifications.

Lay Message Many tie-up systems used with horses are believed to be safe. This mechanical testing shows they do not always behave as equestrians expect them to when a horse panics. Some equipment may allow force ranges to exceed 90-600 kg or release unpredictably. This range of forces and variability in performance may increase injury risk to horses and handlers. Choosing purpose-designed systems with a defined, proven automatic release and soft lightweight materials that create quieter, more predictable environments, can reduce injury risks and help improve welfare and working safety in everyday equine handling.

#18 Skin lesions caused by stabling and animal interaction in adolescent horses in different housing systems

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Agonistic behavior among horses can lead to injuries. We hypothesized that the incidence of skin lesions and by inference behavior is influenced by sex and housing system in adolescent horses. Thoroughbred fillies (n=23, age 22±5 months, range 17-28 months) and Warmblood colts (n=19, age 26±1 months, 24-27 months) were transferred from pasture to either individual boxes (3.4x3.6 m; 11 fillies and 10 colts) or group housing (14x18 m; 12 fillies, 9 colts, 2 groups of 4-6 horses per sex). The number and degree of lesions were assessed weekly over 11 weeks starting at one week after stabling as described previously (Kroschel et al., 2026, Animal 19, 101584). The occurrence of lesions was compared by repeated measure ANOVA with time as within subject factor and sex and stable as between subject factors. Most lesions were non-perforating (86% in fillies and 95% in colts) with the remainder classified as perforating skin lesions or hematomas. There were no lesions that required veterinary treatment or interruption of equestrian schooling. The number of lesions was similar in all groups at the beginning of the study and in box-housed fillies and colts decreased continuously over time ($p<0.001$) but increased and was higher in group-housed colts than in all other groups for eight weeks. A smaller transient increase in the number of lesions occurred in group-housed fillies (week x stable $p<0.001$, sex $p=0.003$). In weeks 10 to 12, differences among groups were no longer evident. In conclusion, group-housing is possible in both postpubertal fillies and colts. Group housing after regrouping of horses kept on pasture before stabling is associated with a transient increase in the number of skin lesions which is more pronounced in colts than in fillies. Differences between young Thoroughbred and Warmblood horses or subtle effects of age cannot completely be excluded.

Lay Message Skin lesions caused by stabling or interaction among horses were more frequent in young colts than fillies. The occurrence of such lesions decreased after approximately eight weeks of stabling, suggesting development of a stable structure among group-housed horses.

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#19 Co-creation, implementation and testing of resources to support wound management practices in horse owners/carers

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Wounds are a common and important problem in the horse. The objective was to co-create and trial resources for owners/carers on equine wound management. Phase 1 used an online survey and focus groups with UK stakeholders (owners/carers and veterinary teams) to identify which aspects of wound management were most concerning, and what format they preferred for educational resources. The second phase developed new resources based on these findings. The third phase trialled these resources through a randomised controlled trial, with one group of owners/carers receiving the resources, and the other group not (control). Surveys and vignettes (hypothetical wound scenarios) were used to determine baseline knowledge and decision-making, and compare after intervention. Descriptive data analysis was performed (%; x/y). Group comparisons used Fisher's Exact and Mann–Whitney U tests, and paired binary changes were assessed with McNemar's test ($p<0.05$). In the first phase, stakeholders identified first-aid, high-risk wounds and when to call the vet as key topics for the resources. In the second phase, online resources including guides, interactive questionnaires, and videos were developed. The third phase recruited 147 varied stakeholders. Before receiving the resources, 44.3% (47/106) of owners did not select appropriate bandaging materials. At least 12.8% (14/109) of stakeholders were uncertain whether to call the vet for serious wounds, and many made inappropriate management decisions for wounds over synovial structures and nail penetrations. After accessing the resources, over 88.3% (68/77) contacted a vet for serious wounds. There was a significant difference ($p=0.039$) in selection of appropriate bandaging materials 64.7% (44/68) between case and control groups. Educational resources were co-designed using an iterative approach with stakeholder input. Existing approaches to wound management highlighted variation as well as safety concerns. The intervention supported changes in wound decision-making therefore enhancing welfare. These findings support the public release of the resources and large-scale evaluation.

Lay Message Wounds are a common problem in horses, but owners often struggle to know what the best thing to do is. This project worked with horse owners and carers, and vet teams to decide what information and resources would be most helpful. These were then trialled with groups of owners to see if they helped. After using the resources, owners were better at bandaging wounds. Owners were more confident in deciding when to call the vet, how they identified problem wounds, and there was a significant difference in choosing the appropriate bandaging materials.

#20 Prevalence and temporal patterns of abnormal repetitive behaviors in early-career thoroughbred racehorses

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Abnormal repetitive behaviors (ARB) are recognized welfare indicators in horses, however quantitative longitudinal data in young Thoroughbred racehorses under uniform racing yard management are limited. This study quantified ARB prevalence and temporal patterns in twelve two-year-old horses, comprising five mares and seven stallions, at the onset of their racing careers. All horses were housed individually in wooden boxes with windows, receiving uniform training, and limited turnout management in one professional German racing facility, with visual contact to conspecifics. The feeding strategy was consistent across horses, while the diet composition was adjusted individually. A total of 552 hours of video material were analyzed across 5 investigation dates between March and October 2024 during their first year of race-training. ARBs were recorded as discrete events using instantaneous sampling (every 10 seconds) and standardized ethograms, covering oral ARBs (cribbing, wood chewing, licking, tongue play, teeth grinding, bar biting) and locomotor ARBs (box walking, head tossing, pawing, kicking, bucking, rearing, stamping). All horses exhibited at least one ARB, with individual frequencies ranging from 0.5 to 7.1 counts per hour. Locomotor ARBs were more prevalent (2.2 ± 2.7 counts/h) than oral ARBs (0.4 ± 0.4 counts/h). ARB occurrence increased from 2.4±2.0 to 19.2±14.5 counts/h prior to concentrate feeding ($p < 0.001$). Locomotor ARBs increased from 1.8±2.3 to 6.1±7.0 counts/h during human presence ($p < 0.05$), whereas hay availability ($p = 0.72$) and whether horses were observed pre- or post-training ($p = 0.11$) had no effect. These findings demonstrate considerable inter-individual and contextual variation in the occurrence of ARBs, even under uniform housing and management conditions. The consistent presence of such behaviors in all horses underscores their early establishment during initial training stages. Context-dependent fluctuations highlight the complexity of ARB expression and the need to better understand underlying mechanisms in order to improve welfare assessment in racehorses.

Lay Message Young Thoroughbreds often show abnormal repetitive behaviors (ARB), such as head-tossing or box-walking, indicating reduced welfare. In twelve two-year-olds under standard housing and training, all displayed at least one ARB, mostly locomotor stereotypies. Behaviors peaked before feeding and during the presence of people. Early detection and targeted enrichment could improve welfare and reduce stress.

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#21 Ear and tail postures as indicators of affective state in horses

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Behavioural indicators of affective state are central to advancing objective welfare assessment in horses. This study investigated whether ear and tail postures differentiate experimentally induced negative, neutral, and positive states. Twenty-six horses (mean ± SD age 11.57 ± 4.93 years; 15 mares, 11 geldings) were observed under a repeated-measures design during temporary social separation (negative), undisturbed rest (neutral), and supplementary feeding (positive). Each horse was observed once per condition, with behavioural counts analysed using negative binomial generalized linear mixed-effects models, employing condition as a fixed effect and horse as a random intercept. Condition significantly influenced multiple ear behaviours, showing graded patterns across negative, neutral, and positive states. Ear forward frequency was higher in the negative condition than neutral (estimate ± SE = 0.53 ± 0.11, $p<0.001$) and positive (0.86 ± 0.13, $p<0.001$), and higher in neutral than positive (0.33 ± 0.14, $p=0.017$). Similar patterns were observed for asymmetrical ear posture (negative vs positive: 1.79 ± 0.30, $p<0.001$), ear scanning (2.46 ± 0.30, $p < 0.001$), and total ear posture changes (0.71 ± 0.11, $p<0.001$). Neutral ear positioning was most frequent in the positive condition (vs negative: –0.42 ± 0.14, $p=0.009$). Ear backward showed no differences. Tail behaviours showed weaker differentiation, with tail raised more frequent in the negative condition than neutral (0.94 ± 0.22, $p<0.001$) and positive (1.46 ± 0.28, $p<0.001$), and tail changes greater in negative versus positive (0.31 ± 0.12, $p=0.034$). Although ear postures were closely correlated with condition in this study, when reviewing existing literature position more likely reflects attentional engagement and vigilance rather than emotional valence alone and should not be interpreted in isolation. Ear posture should be considered contextually, alongside other behavioural cues when assessing welfare or guiding applied equitation decisions.

Lay Message This study examined whether horses' ear and tail positions can help indicate how they are feeling. Twenty-six horses were observed in three situations designed to create negative, neutral, and positive emotional states. Ear behaviours changed clearly across these conditions: horses showed more forward ears, ear movement, and ear scanning during the negative situation, while neutral ear positions were most common during the positive feeding condition. Tail behaviours showed weaker or inconsistent differences. Overall, ear postures were strongly linked to the situation, but likely reflect attention and vigilance, so they should always be interpreted alongside other behavioural cues.

#22 What makes an image 'positive'? Horse enthusiast's welfare perception of Paris 2024 equestrian photos

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Equestrian sport faces mounting scrutiny as its social licence to operate increasingly hinges on visible commitments to equine welfare. This study examined how horse enthusiasts interpret "positive" images from the Paris 2024 Olympic equestrian events, and what visual characteristics strengthen (or erode) perceived legitimacy. An accredited photographer captured 4,774 images across dressage, show jumping, eventing, training, and behind-the-scenes. A six-stage photo selection protocol was used to review, anonymise, and randomly select 30 images for inclusion in an online survey. A sample of 514 respondents viewed the images and answered five open-ended questions. Qualitative thematic analysis of open responses identified cross disciplinary convergence around three core markers of "positive": (1) horse first partnership: visible praise, empathy, and authentic moments of care; (2) signs of positive affect: relaxed facial expression, ear posture, and low tension; and (3) rider fairness: harmonious balance, soft hands, and non interference. Discipline-specific filters shaped tolerance for exertion and risk: dressage judgments centred on biomechanics (self-carriage, poll position) and concerns about restrictive tack; show jumping evaluations blended athleticism with equipment scrutiny (nosebands, bits, martingales) and post-round reward; eventing appraisals weighed dynamism and bravery against fatigue, safety, and ethical risk. Participants were highly attentive to the optics of imagery for non-equestrian audiences and rejected "bad apple" explanations, emphasising systemic norms (judging, equipment, training culture). Overall, enthusiasts view Olympic images as ethical statements. Images that communicate relaxation, reciprocity, and genuine partnership may bolster trust and sustain social licence, whereas recurring cues of tension, coercion, or restrictive tack risk reputational harm and call for governance, education, and media practice reform.

Lay Message This study explored how horse enthusiasts judge "positive" images from the Paris 2024 Olympics. Thirty images that an expert panel considered positive were shown to 514 people, who ranked them and explained their choices. Viewers agreed that good images show three things: a horse first partnership (care, praise), signs that the horse feels comfortable (relaxed posture, expression), and fair, ethical riding. Each discipline applied its own lens, especially around tack, effort, athleticism and safety. Overall, people saw these photos as ethical statements. Images showing relaxation and genuine partnership build trust, while tension or restrictive equipment can damage the sport's reputation.

#23 Recognition of equine emotional states by Dutch citizens: A valence–arousal approach

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Recognition of equine emotional expressions is important for horse welfare, human safety, and human–horse interactions. This study assessed how accurately Dutch citizens identify emotional states in horses and whether recognition differs across emotional valence–arousal categories. An online questionnaire was completed by 234 respondents, who evaluated 20 photographs of whole body expressions of dogs and horses (each species 5 photographs per quadrant). Images represented four emotion groups within a valence–arousal framework (5 photos per quadrant): (1) playful/curious/excited (positive–high arousal), (2) calm/relaxed (positive–low arousal), (3) depressed/bored (negative–low arousal), and (4) fearful/angry/frustrated (negative–high arousal). All photos were pre-selected based on full agreement between three equine and three canine behaviour experts. Respondents assigned each photo to one emotion group, and data were analysed using t-tests and ANOVA ($p = 0.05$). Overall accuracy for horses was 47.3%, significantly lower than for dogs (71.8%; $t = –9.74$, $p < 0.001$). Recognition differed significantly across emotion quadrants ($F = 34.62$, $p < 0.001$). Positive–low arousal expressions were most accurately identified (77.46%), whereas negative–high arousal expressions were least recognised (19.34%). Interobserver consistency for horses showed 46.6% complete agreement across repeated images. Respondents who currently or previously owned horses scored significantly higher than those without such experience ($t = 4.356$, $p < 0.001$), although accuracy remained lowest for negative, high-arousal states in all groups. These findings show that the public readily recognises calm, positive equine emotions, supporting wellbeing assessment, but struggles to identify negative, high-arousal states. Accurate recognition of such negative emotional responses is essential for preventing and respond to dangerous situations and ensuring human safety, while welfare assessment requires recognising both positive and negative emotions to evaluate whether horses experience an overall positive emotional balance. Improving awareness of both positive indicators of wellbeing and subtle signs of tension and distress may enhance welfare assessment, human–horse safety, and human–animal relationships.

Lay Message Understanding how horses feel is important for their welfare and for safe human–horse interactions. This study examined how well Dutch citizens recognise emotions in horses using photographs. Overall, people recognised horse emotions less accurately than dog emotions and found calm, positive states easiest to identify. Signs of fear, frustration, or distress were often missed, even by experienced respondents. Because recognising negative emotions is essential for preventing dangerous situations and safeguarding welfare, these results highlight the need for better public awareness of equine body language. Improving knowledge of both positive and negative emotional signals may enhance horse welfare and safety.

#24 Toward precision horse training: Integrating sensor technologies and artificial intelligence to monitor sport horse welfare and performance

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Background: Precision Livestock Farming is an advanced approach to animal management that uses sensor technologies, automated data collection and computational analysis to monitor animals continuously and objectively. In sport horses, monitoring physiological and biomechanical parameters is important because high training loads may lead to fatigue, stress or musculoskeletal injuries. Wearable sensors, video analysis and artificial intelligence are contributing to the development of a data-driven approach to equine training and management called "Precision Horse Training". It allows individualized training programs, optimize performance and safeguards welfare through monitoring and evidence-based decision-making. Objectives: The aim of this study was to explore the potential of Precision Livestock Farming technologies for monitoring behavioral, physiological and biomechanical parameters in sport horses during training and management. Methods: Wearable and vision-based monitoring technologies were evaluated in horses during routine training. Heart rate monitors assessed cardiovascular workload and recovery. Tri-axial accelerometers measured locomotion dynamics, stride characteristics and activity patterns. Video recordings were analyzed using computer vision algorithms to extract gait parameters and morphometric indicators, while artificial intelligence models identified behavioral and facial signs associated with stress or discomfort. Results: Accelerometer data enabled reliable classification of locomotor activities and provided information on stride frequency, movement intensity and gait transitions. Changes in movement symmetry and acceleration patterns allowed identification of locomotor irregularities during training. Heart rate monitoring revealed relationships between exercise intensity and cardiovascular response, with heart rate variability providing information on recovery and autonomic balance. Computer vision analysis allowed extraction of gait parameters such as stride length, stance duration and limb movement symmetry. Artificial intelligence approaches also showed potential for identifying behavioral indicators associated with discomfort or fatigue. Conclusions: The combined use of sensor technologies, computer vision and artificial intelligence provides a framework for Precision Horse Training, supporting objective monitoring, individualized training management and improved welfare in sport horses.

Lay Message Sport horses experience intense physical demands during training and competitions. New technologies can help monitor horses continuously and objectively. Sensors such as heart rate monitors and accelerometers measure exercise intensity and movement patterns, while video analysis and artificial intelligence can detect subtle changes in gait or behaviour that may indicate fatigue or discomfort. These tools may help trainers and veterinarians adjust training programs, detect potential injuries earlier, and improve both horse welfare and athletic performance.

#25 The effect of different types of sounds in the stable on the time taken by horses to consume their feed

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Horses' cognitive abilities are more acute than those of humans; their perceptiveness often surpasses our own. Noises inaudible to humans can sometimes be a source of stress for the animals. A hypothesis was formulated that a specific sound stimulus disrupts the normal feeding behaviour, which is reflected in the longer time on feeding. Furthermore, it was assumed that non-standard sounds in the stable environment (e.g. chainsaw, fireworks) cause a greater increase in time spend of feeding compared to standard sounds (e.g. loud laughter, crunch of gravel underfoot). The study involved 10 horses (5 warmbloods, 5 ponies; 6 mares, 4 geldings), kept in the same housing place for at least 5 years, that were fed in the same way. The time it took the horses to consume their feed was measured while playing sounds that were standard or non-standard for the stable environment. Sounds standard of the stable environment were played alternately with non-standard sounds on successive days. The significance of differences between the means of feed intake time was determined using the Kruskal-Wallis test and the Mann-Whitney U test for sex and breed type. It was found that the horses spent shorter time eating when no sounds were played (159.38 s) or when standard sounds were played (202.12 s), and longer when non-standard sounds were played (287.34 s; $p<0.05$). When standard sounds were played, mares consumed feed faster than geldings (174.52 s vs. 243.52 s; $p<0.05$). Type of horse had no effect on consumption time. When analyzing individual sounds, the sound of fireworks had a particular effect on prolonging consumption time (410.47 s; $p<0.01$) among several other sounds. It was concluded that sound stimuli can alter the feeding behaviour of horses, may potentially be a significant stressor, and that - in the interests of horse welfare - non-standard sounds should be minimized.

Lay Message Sense of hearing is very sensitive in horses, unfamiliar sounds can be stressful. Horses' feed consumption time was examined when playing sounds typical and untypical for stable environment. The results confirmed that horses ate longer when untypical than typical sounds were played. During typical sounds mares consumed faster than geldings, which suggests greater alertness in geldings. The sound of fireworks particularly increased consumption time. Considering that prolonged feed intake translates to higher emotional arousal, it was concluded that attention should be paid to limiting untypical sounds in stables, especially at feeding time. This will have beneficial impact on horses' welfare.

#26 Why ISES must adopt a standardised definition of pain

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ISES has advanced evidence-based horse training for two decades without formally adopting definitions of "pain" or "discomfort," despite the latter term appearing in our position statements. When nociceptors are stimulated by aversive stimuli, the scientifically supportable descriptor is pain. Equipment that engage nociceptors (bits, nosebands, spurs, whips) causes pain. The International Association for the Study of Pain (IASP) defines pain as "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage." As an emotional experience, pain encompasses anxiety, fear, and stress when associated with tissue damage. Critically, there is no threshold where "discomfort" stops and "pain" starts—both describe points on a continuum. The World Veterinary Association adopted the IASP definition verbatim in 2023 for farmed animals, explicitly acknowledging that husbandry practices such as tail docking and disbudding cause pain. ISES's adoption would align equitation science with this international veterinary consensus rather than pioneering a radical position. What WVA acknowledged for cattle, sheep, and pigs, ISES should acknowledge for horses. ISES position statements on Aversive Stimuli, Restrictive Nosebands, and Head/Neck Posture often distinguish "pain" from "discomfort" as if categorically different, yet this distinction lacks scientific foundation. Under IASP's framework, pain ranges from mild through moderate to extreme intensity. What ISES terms "discomfort" is mild pain. There is clear need to review references to "discomfort" in ISES advisory resources and sport horse authorities' regulations. The term misrepresents what horses experience from aversive equipment and practices. Moreover, "discomfort" functions as euphemistic labelling that enables maintaining practices conflicting with values. As a scientific organisation, ISES's adoption of the IASP definition will ensure our work remains grounded in evidence, advance ethical transparency by acknowledging negative reinforcement uses pain (however minimal, when properly applied), and enhance credibility by joining international veterinary consensus rather than perpetuating euphemisms.

Lay Message Scientists studying horse training have spent twenty years teaching people how to train using aversive pressures, but have never clearly defined what "pain" means or how it differs from "discomfort." This creates a problem: trainers can claim they avoid causing pain whilst still using techniques horses find unpleasant. Science defines pain as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage." Using this clear definition reveals that even "minimal discomfort" is actually mild pain. Horse training organisations must adopt this clear, scientific definition and stop using vague terms such as "discomfort."

#27 Could pressure algometry support clinical signs in referral of suspected overriding dorsal spinous processes in horses?

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Overriding dorsal spinous processes (ORDSP) cause equine thoracolumbar pain, with definitive diagnosis reliant on radiography. An objective 'field-based' measure to support musculoskeletal therapists' clinical reasoning could be beneficial for veterinary referrals and horse welfare. To investigate whether dorsal spinous process (DSP) mechanical nociceptive thresholds (MNTs) can distinguish horses with radiographically confirmed ORDSP from asymptomatic and radiographically negative control horses. Prospective, controlled, observational clinical study. 50 horses, mixed ages and heights, in 3 groups: A: radiographically confirmed ORDSP(n=20) B: veterinary assessed asymptomatic(n=20), C: radiographically negative ORDSP(n=10). Groups A and B: a digital pressure algometer (PA) device measured triplicate MNTs for DSP and left/right 10cm lateral midline sites from T10–L6. Clinical symptoms of ORDSP (e.g. palpation pain, saddling discomfort, behavioural resistance, reduced performance, reluctance to go forward) were summated. Group C: Triplicate MNTs for DSP T10-L6 for contextual reference values. Statistics: Shapiro-Wilk test, T-tests, linear regression, Spearman's rank correlation, mixed-effects modelling and receiver operating characteristic (ROC) analysis. Group A demonstrated significantly lower mean MNTs (4.54 ± 0.34 kg/cm^2) than group B (8.81 ± 0.36 kg/cm^2) ($P < 0.001$). Group C mean MNTs (9.49 ± 0.52 kg/cm^2), no significant difference to group B ($P > 0.05$). No significant associations between left or right MNTs, $P > 0.05$. Group A DSP MNTs were significantly associated with lesion count ($r^2 = 0.24$, $F(1,18) = 5.68$, $P = 0.03$) with negative correlation ($\rho = -0.61$, $n=20$, $P = 0.004$) and negative correlation with symptom burden ($\rho = -0.51$, $P = 0.02$). ROC analysis identified DSP MNT threshold of ≤ 4.08 kg/cm^2 (AUC = 0.90), with 85% sensitivity, 90% specificity. Horses with a greater number of radiographic ORDSP sites exhibit lower DSP MNTs. Asymptomatic horses exhibit higher mean DSP MNTs. Veterinary referral is strongly indicated for undiagnosed horses when DSP minimum MNT ≤ 4.08 kg/cm^2 is combined with ≥5 symptom burden score.

Lay Message Clinical signs associated with kissing spine (ORDSP) in horses are often subtle or inconsistent. Owners may notice back pain on touch, discomfort when saddling (e.g. ears back or tail swishing), resistance behaviours such as bucking, reluctance to go forward, or reduced performance. Assessment often relies on subjective interpretation of behaviour and movement, leading to variability in referral for diagnosis. An objective, repeatable measure to support clinical decision-making for veterinary referrals could improve welfare in affected horses.

#28 Radiofrequency improves multifidus muscle CSA and back mobility in Thoroughbred horseball horses

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Back pain in sport horses is often linked to dysfunction and reduced size of the multifidus muscle, a key stabiliser of the spine, yet effective, evidence-based interventions to restore its function remain limited. We aimed to investigate the effects of an 8-week 448 kHz radiofrequency (RF) on multifidus cross-sectional area (CSA) and thoracolumbar differential range of motion (ROM). Eight Thoroughbred horseball horses received four RF treatments (T9–L6) at 15-day intervals. Multifidus CSA (T10–L5) was measured using cross-sectional diagnostic ultrasound imaging, while differential spinal ROM between the withers (W), T13, T18, L3 and sacrum (S) was quantified using an inertial measurement unit (IMU) system during in-hand trot before the first session, immediately after the first session, 24 hours after the first session, and at 8 weeks (15 days after the last session). Linear mixed models with Tukey post hoc comparisons were used. Significant effects of timepoint for CSA were significant with CSA increased at 8-weeks at all sites (T10–L5; all $P < 0.001$). No significant Time × Side interactions were identified for CSA (all $P \geq 0.334$), demonstrating bilaterally consistent responses. Absolute increases versus baseline were greatest at T18 (+2.52 cm^2), L5 (+1.90 cm^2), and T16 (+1.77 cm^2) (all $P < 0.001$). Axial rotation ROM increased transiently between W–T13 at 24h (+4.8°, $P < 0.001$) but returned toward baseline at 8-weeks. Caudal thoracolumbar motion (T18–L3) decreased at 8-weeks (−4.2°, $P = 0.004$), suggesting improved segmental stability. Flexion–extension increased immediately post-treatment at W–T13 (+2.29°, $P = 0.009$) before reducing below baseline at 8-weeks (−2.49°, $P = 0.005$). Lumbosacral ROM showed minimal change. RF therapy was associated with multifidus hypertrophy alongside region-specific modulation of spinal motion, characterised by transient mobility increases followed by reduced caudal thoracolumbar motion, consistent with improved neuromuscular dynamic stabilisation via multifidus hypertrophy.

Lay Message We explored whether radiofrequency could improve back muscle development and movement in horses over eight-weeks. Horses received regular treatments, and we measured both the size of a key stabilising muscle (multifidus) and spine movement. By the end of the study, the muscle had increased in size, suggesting stronger support for the spine, but movement in the lower back had reduced slightly, which could reflect improved stability rather than stiffness. Overall, the findings suggest that radiofrequency therapy may help strengthen back muscles and support control of movement, which could be beneficial for performance and long-term back health in sport horses.

#29 Competition status and discipline are associated with bit-related oral lesions detected during routine dental examination in horses

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Bit-related oral lesions are recognised welfare concerns in sport horses and are frequently reported in horses examined after competition, but less is known about their occurrence during routine dental care. The objectives were to compare the prevalence of bit-related oral soft tissue, bone and dental lesions in competing sport and non-competing pleasure horses during routine dental care, and to assess association with competition variables. A total of 432 horses aged ≥4 years, including competing sport horses (n= 132: 54 trotter, 40 show jumping, 38 dressage) or non-competing pleasure horses (n=300), were examined during routine dental care in Finland between 2016 and 2020. Oral soft tissue lesions, mandibular bar bone spurs and second premolar wear were recorded. Associations with horse characteristics, competition status, discipline, number of competitions and time since last competition were analysed using multivariable logistic regression. Results showed that 29.2% (n=126) of horses had soft tissue lesions, 22.7% (n=98) mandibular bar bone spurs and 30.8% (n=133) dental wear. Acute sof tissue lesions (11.8%), including wounds, abrasions and haemorrhagic lesions, were more common in horses examined within two weeks of competition than in those examined between 2 weeks to 2 months. Acute soft tissue lesions were more frequent in competing sport horses, particularly trotters, compared with non-competing pleasure horses. Bone spurs increased with age and were more prevalent in ridden sport horses than in pleasure horses. Dental lesions were primarily associated with breed, with warmbloods showing the highest prevalence. Competition-related variables were not consistently associated with bone or dental lesions. In conclusion recent competition was associated with detecting acute bit-related soft tissue lesions during routine dental care, whereas bone spurs and dental wear were more related to age and breed suggesting cumulative exposure to bit pressure.

Lay Message Competition use increases the risk of bit-related oral lesions, which can be detected during routine dental care. Disciplines vary in predilection locations of bit-related lesions, ridden sport horses having more bone spurs whereas trotters had more acute soft tissue lesions. Routine oral examination may act as intervention point for preventing bit-related lesions to become chronic.

#30 What proprietary racing and punting data reveal about whip use

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A recent industry analysis of more than 75,000 individual runner observations across seven seasons of Hong Kong thoroughbred racing raises findings that equitation scientists cannot afford to ignore. Drawn from the RaceQuant Whip Database and compiled by Hong Kong racing handicapper Sohil Patel (recording strike frequency and race phase for every starter), the dataset identifies a robust and consistent selection effect: horses that complete races without being struck win at nearly double the rate of whipped horses across all major training stables. The finding holds universally from trainer by trainer, season by season and it seems to mirror what statistical reasoning would predict. Jockeys apply the whip in response to a horse that is already underperforming. The whip is a marker of struggle, not a reliable stimulus for improved performance. More striking than the finding itself is the context in which it was generated. The analysis was produced by a large language model working from Patel's proprietary dataset, authored outside the peer-reviewed literature, and published on the RaceQuant platform. No ethics review was conducted. No methodology section was submitted for scrutiny. And yet, on its central inferential point — the misattribution of causation in observational whip data — the analysis is correct, and it engages an evidentiary gap that the scientific literature has been slow to fill. A second RaceQuant analysis, examining barrier draw statistics across 350 races over 20 seasons, further demonstrates the capacity of such datasets to overturn beliefs among highly skilled practitioners. These developments represent both a challenge and a call to action for equitation science. The field must engage proactively with Patel and others generating non-academic data streams of this quality. We must challenge and extending them with the rigour that evidence-based welfare policy demands. Bookmakers are asking questions that equitation science should have answered years ago.

Lay Message New data from seven seasons of Hong Kong racing, compiled by handicapper Sohil Patel through his RaceQuant platform, shows that horses who are never whipped win at nearly twice the rate of those whipped. This not because avoiding the whip helps them win, but because jockeys only whip struggling horses . This finding, generated by AI working from Patel's dataset, exposes a long-standing gap in how racing's welfare debates are conducted: compelling television moments substituting for evidence. Equitation scientists must engage directly with data sources such as RaceQuant and provide the rigorous, peer-reviewed analysis that regulators and industry urgently need.

#31 Residues of human medicines and stimulants in horses: Performance enhancers or slack management?

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Anti-doping regulations exist for equestrian sports and for horse racing to ensure a level playing field and horse welfare. End-of-career horses are regularly slaughtered in the Netherlands and in 2024, animal welfare organization House of Animals claimed Dutch slaughter of illegally discarded foreign racehorses. In order to gain insight into possible abuses with regard to the use of animal treatment products in horses, 105 individual horse kidney samples were collected randomly by the Dutch competent authority in Dutch slaughterhouses and analysed using liquid chromatography combined with high-resolution mass spectrometry. The obtained data were compared with internal and external mass spectral libraries. Target screening was performed on a predefined list of substances, obtained by literature review on positive findings in horseracing and sport horse doping controls. Results showed presence of three prohibited substances in, in total, 12% of the samples. Caffeine (n=3) and theobromine (n=9) are both stimulants and regularly reported in doping reports. However, both also occur naturally with theobromine mainly found in cocoa, and caffeine in cocoa, coffee and tea. Their presence is also reported in feed. Ritalinic acid (n=2) is the main metabolite of methylphenidate, a widely used ADHD drug (known as Ritalin) and prohibited for use in equestrian sports and horse racing. It has a stimulating effect on the central nervous system and has been found several times in doping controls. The findings of this study indicate that horses are, whether intentional or not, exposed to stimulants that can influence their natural performance and well-being. The relatively high percentage of stimulants present in the samples substantiates the need for adequate feeding and medication strategies.

Lay Message Anti-doping regulations exist to ensure horse welfare and fair equestrian sports. As end-of-career sport horses are often slaughtered in the Netherlands and suspicions arose of illegal slaughter of foreign racehorses, kidneys from 105 horses were sampled in Dutch slaughterhouses, and analysed for doping. Three prohibited substances were found in 12% of the samples. These findings indicate that horses are, whether intentional or not, exposed to illegal substances. Responsible feeding and medication strategies are important to prevent this.

#32 'Force', 'pressure' or 'encouragement'? Exploring the presentation of aversives in horse training discourse

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The use of 'aversives' (stimuli individuals will work to avoid or remove) is a common yet controversial aspect of horse training with potential to harm both equine wellbeing and the sector's public image. How practices are discussed by equine professionals offers insight into the speaker's own beliefs and understanding, whilst also influencing how others perceive those practices. This study applied discourse analysis to the language used during horse training to explore how aversive use was presented and discussed. Publicly available online videos featuring horse training were utilised, including audio transcripts of twelve trainers' narratives. Whilst trainers frequently referred to their use of reinforcement, direct mention of aversives was limited. When present, these were often framed as 'encouragement' and conveyed using vague and euphemistic terms. Passivisation and nominalisation of language was identified, removing agency of the trainer and separating their actions from the horses' experience of unpleasant stimuli. At times, responsibility to avoid aversives was placed on the horse and framed as affording agency within training. The reasoning behind the use of linguistic strategies that minimise the role and impact of aversives within horse training remain unknown and warrants further exploration. It could represent conscious choice to frame training more positively, reflect trainers' own discomfort, or wider social taboo surrounding this subject. Regardless, potential implications must be acknowledged as this could be construed as presenting a 'false front' to onlookers, desensitise others to the application of aversives thus increasing their use, and hinder clear communication and education in this area. Given the power words hold to influence the future of horse training, it is vital greater consideration is given to equestrians' language use. Doing so will enhance clarity, demonstrate transparency and commitment to the industry goal of promoting horse training that prioritises equine wellbeing.

Lay Message This study used online videos to explore how horse trainers talk about aversives. Aversives are 'unpleasant stimuli an individual will work to avoid or remove' and are commonplace in equestrianism despite potentially compromising horse welfare and public image. Trainers used vague language when describing their own aversive use, and worded things in a way that minimised their own responsibility or justified their use. It remains unknown whether trainers spoke this way intentionally, or because they feel unease in acknowledging this topic. Regardless, it's important this area is further explored to promote clearer communication and more welfare-friendly training.

#33 Who is in control and how is it described in horse training?

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'Training' involves shaping horses' behavioural responses so they can fulfil roles within human society. Trainers' beliefs, values, and interpretation of horse training concepts likely influence the strategies used to achieve training goals. Examining how this subject is discussed provides insight into how horse training is conceptualised and approaches justified. This study strategically sampled publicly available online videos featuring horse training. Twelve audio transcripts of trainers' narratives were studied using discourse analysis. Whilst a range of themes were identified, the most prevalent and arguably complex of these centred around the depiction of 'control' in horse training. Distinct differences in beliefs about who should have control were present. Many trainers emphasized that humans should have total control of the horse's movement and attention, attempting to establish this at the beginning of training sessions and considering this a prerequisite for the development of trust. Others held an opposing view, outlining a desire let the horse have 'control' and 'choice' during training. For some, this meant horses were free to opt out of a training session without negative consequence. Others stated that horses are free to choose whether or not they comply during training, even though non-compliance would result in aversive consequences being applied. Historically, humans seeking total control over horses was necessary, enabling their use in transport, agriculture and warfare. However, in modern western society horses are primarily used for recreation. With growing understandings of sentience, agency and autonomy within animal welfare, it is time to review existing norms regarding control and question whether holding modern horses to the same values as their ancestors remains morally acceptable. These findings demonstrate inconsistencies and a lack of clarity regarding the concept of control in modern horse training, potentially reflecting the uncertainty trainers face when navigating the competing demands of human safety, equine welfare and societal values.

Lay Message This study investigates how horse trainers talk about their training. Audio transcripts were obtained from online videos and discourse analysis applied. A prevalent theme was the subject of 'control', although how this concept was understood varied between trainers. Distinct differences were seen in beliefs regarding who should have control during training. For some, establishing control of the horse was paramount. Others believed horses should have some control, although with varying interpretations of what this involved. Ultimately, findings reveal inconsistent interpretations of this subject, potentially reflecting the challenge of balancing human safety, equine wellbeing and social expectations in modern horse training.

#34 Cooperative care and positive reinforcement in equids: A scoping literature review

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Cooperative care, training an animal to voluntarily participate in care procedures using positive reinforcement, may improve welfare and lower stress in equids. This scoping literature review synthesizes two bodies of research: cooperative care in animals and positive reinforcement in equids, to analyze the current evidence on cooperative care and assess how it applies to equids. Two searches of the peer-reviewed literature were conducted in ScienceDirect, CABI Digital Library, PubMed, and Google Scholar using predefined search terms and eligibility criteria. Publications were reviewed against two sets of inclusion and exclusion criteria. A total of 1,510 studies were identified, and 18 met the inclusion criteria for the final analysis. Included studies fit into two categories: 1) cooperative care in non-primate mammals and 2) positive reinforcement training in equids. All of the included studies involving cooperative care consistently achieved target behaviors, while equine positive reinforcement research reported outcomes including increased motivation to explore novel objects or humans, increased contact-seeking behavior toward humans, reductions in undesirable behaviors, and improved training efficacy. The current literature on cooperative care is sparse, highlighting the need for further research. However, there is no published evidence of cooperative care in equids and, more broadly, the literature on positive reinforcement in equids is limited. This review provides a foundation for the development of future equine cooperative care research.

Lay Message We reviewed all peer-reviewed literature on cooperative care, which is where the animal chooses to be part of its own care using food-reward-based training. Because there are no studies on cooperative care in horses, we looked at two kinds of studies: cooperative care with zoo animals and positive reinforcement (training using food rewards) with horses. We included 18 studies and found that cooperative care works for medical care in zoo, livestock, and companion animals. We also found that positive reinforcement had positive results for horses, but more research needs to be done on cooperative care for horses.

#35 Insufficient knowledge of rider anatomy, and inconsistent instructions from riding teachers - A dilemma for horses in their interpretation of rider's signals

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Background: Currently, riding instructor education doesn't include sufficient knowledge of human anatomy and how it affects riders' balance and ability to influence the horse. In literature, used at riding instructor education, descriptions like "Try to give the rider a feel for how the signals should interact during the transition" are found. An example of how riders are left alone to figure out how to reinforce the horse. Objective: The aim was to understand how riding instructors themselves apply, and instruct riders how to apply, signals to the horse. The benefit of this is to develop a systematic description of how riders should use their body to communicate consistent signals to the horse. Method: Semi structured interviews with ten riding instructors working as educators for riding instructors and a survey sent to riding instructors working at riding schools (27 responses). Both groups were asked to describe how, from an anatomical perspective, forward signals and signals to turn a horse are applied. The results were analysed using phenomenography and compared with descriptions of the same signals in available literature. Results: There were a wide variation and little correspondence between the two groups of respondents. Not one respondent describes the signals in agreement with the literature. On contrary, a diverse range of ways to instruct how to move the body to perform the signals was disclosed. For example, instructors used metaphors and explanations of how the horse is supposed to move. Conclusions: Horses learn from consequent applied signals that reinforce desired behaviour. When riders don't learn how to give embodied signals in one consistent way, the horses will not be given fair conditions to understand, which have negative impact on horse welfare.

Lay Message Today, riding instructor education doesn't include enough knowledge about human anatomy and how to give signals to the horse. In this study, riding instructors were asked how they give forward and turning signals, and their descriptions were compared with course literature. The results showed large differences in how the signals were explained, and no one described them in the same way as the literature, instead instructors use metaphors and explanations of how the horse are supposed to perform. When riders receive unclear and inconsistent instructions, horses may struggle to understand these signals, which can negatively affect their welfare.

#36 Optimal posture crucial for sustainable training – A case study

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Introduction: Horse Val de Mar (VdM) underwent three emergency laparotomies within two years: First for a lipoma, requiring 6.5 meters of intestinal resection, second for anastomotic failure, and third for a vascular-induced intestinal torsion. Objective: To describe a sustainable training method focusing on rebuilding strength by posture control and movement symmetry aimed for long-term training and rehabilitation after repeated laparotomy. Methods: A 16-week barefoot rehabilitation programme began with in-hand walking twice daily for 10 minutes, increased by 5 minutes per week to 1 hour/day. Training was performed in-hand to allow continuous observation and adjustment of pelvic alignment, joints and hoof angles. The aim was to encourage coordinated activation of the back and abdominal muscles while avoiding asymmetric loading. Ridden work in walk, trot and canter was introduced gradually. Movement and posture were monitored primarily through continuous clinical observation, positive and relaxed attitude during training, and by listening to the contact sound when each hoof meets the ground in all gaits. One 3D motion-capture assessment was performed after the third laparotomy to support documentation of movement symmetry. Results: VdM developed visibly stronger back and abdominal musculature, more concave soles and improved ability to work in collected movements, including piaffe and passage. After the first two surgeries, he returned to full performance without hernia formation. After the third surgery, two small hernias developed but regressed during continued ridden training. He remained healthy and active for eight additional years. Conclusion: Targeted training promoted optimal posture and muscle activation, reducing strain on tendons, ligaments, joints and hooves. This approach proved in this case, effective and sustainable, enabling a return to high-level performance. An important observation is when the horse achieves optimal posture in movement, it moves more relaxed, with increased energy and range of motion due to assumed reduced opposing forces.

Lay Message Correct posture during training and rehabilitation may help a horse use the back, abdomen and limbs in a more balanced way. In this case, gradual in-hand and ridden training focused on pelvic alignment, joints and hoof angles after repeated abdominal surgery. The horse ValdeMar returned to high-level work and remained happy, healthy and active for additional 8 years after the third abdominal surgery. The case suggests that posture-oriented training can be useful for rehabilitation and as a sustainable training method.

#37 A phenomenologically guided approach to explore the role of horses in equestrian lesson programs through the lens of coaches and riders

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Equestrian lesson programs offer foundational horseback riding education for beginner riders and/or those who do not otherwise have access to horses. Lesson horses often face increased risk for physical and mental health concerns. Coaches and riders are central to horses' daily experiences, yet minimal research has explored the experiences of these individuals within lesson program contexts. Therefore, the objectives for this study were to explore 1) student rider perspectives, experiences, attitudes and beliefs about the role of horses in lesson horse programs, and 2) how horse behaviour is incorporated into these programs. A total of six coaches and 48 riders from six hunter-jumper lesson facilities in Ontario, Canada agreed to participate. A hermeneutic phenomenological approach was used to guide data collection and analysis. Interviews were conducted virtually using a semi-structured interview guide, audio-recorded and transcribed. Transcripts were analysed using reflexive thematic analysis, where codes/meaning units were developed based on participant responses and used to develop broader conceptual themes. Three key themes were developed. The first theme reflects participants' beliefs that lesson horses with differing behaviours provide unique learning opportunities for student riders. The second theme addresses coach and rider beliefs about horse sentience, balancing horses' display of undesirable behaviours in response to lesson program demands, while simultaneously negotiating horses' instrumental and relational value. The third theme reveals a predominant focus on the horse's physicality, or 'quality of movement', within ridden contexts, with limited attention given to behaviours that may indicate intrinsic mental/emotional states. Results suggest that equestrian lesson programs may prioritize horse behaviours aligned with hunter-jumper competition metrics, potentially limiting education about behaviour related to horse welfare and contribute to tension in the human-horse relationship. Collaborative research that engages industry-actors to examine lesson programs from horse perspectives and co-develop solutions is essential for supporting broader cultural shifts toward horse-centered practices.

Lay Message Equestrian lesson programs shape how riders understand horses, but lesson horses can still face physical and mental challenges. This study interviewed coaches (n=6) and riders (n=48) to explore how they view lesson horses and how horse behaviour is taught in these programs. Three themes were developed: 1) riders felt that horses with different behaviours offer valuable learning experiences; 2) participants believed horses are sentient but struggled to balance horse needs with program demands; and 3) there was a strong focus on horses' physical performance rather than their behaviour. These findings highlight a need for more horse-centered practices in lesson programs.

#38 Learning theory (ELT) for the development of students' practical horse handling skills and horse welfare improvement

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Rationale: The purpose of this project was the development of a video library demonstrating how to use equine learning theory in the humane handling, training and veterinary treatment of horses. Objectives: Improve the horse handling skills of veterinary and equine student learners, reduce the risk of injury to horses and handlers, reduce the levels of fear, anxiety and stress (FAS) experienced by horses undergoing veterinary treatments, promote evidence-based and welfare-focused horse handling techniques. Methods: Strategic Alignment of Teaching and Learning Enhancement (SATLE) funding was obtained to hire a video production company to film demonstrations of practical equine learning theory techniques in association with Horse Racing Ireland (HRI) and the Racing Academy. The resulting footage was edited into a high-quality video library that supports universal design for learning (UDL) principles and was made available as a digital open educational resource (OER). Results: The videos have been integrated into horse handing and equine-related programmes at Dundalk Institute of Technology (DkIT) and College of Agriculture, Food and Rural Enterprise (CAFRE). Dissemination of the OER to other education providers, industry stakeholders and those who work with horses is ongoing. Conclusions: Understanding equine behaviour is vital to ensure patient cooperation during clinical interventions. Traditional methods of physical or chemical restraint do not address a horse's underlying fear or anxiety, and may create negative associations that render the horse more difficult to handle in future. Low-stress handling techniques based on ELT enhance horses' cooperation during treatment, thereby reducing injury, improving animal welfare and promoting positive long-term associations with veterinary care. Videos demonstrating ELT training techniques will assist students' learning of welfare-focused equine handling. Training videos enable a skill to be demonstrated to students before they attempt it on a live horse. The video OER may also be used for revision, workplace learning, and practical assessment preparation.

Lay Message This project created a set of freely available training videos demonstrating how to handle and train horses using welfare-friendly, science based methods. These techniques help keep both people and horses safe, especially during veterinary treatments. The videos teach students how to reduce fear and stress in horses, improving their cooperation and overall wellbeing The videos are now used in equine and veterinary education courses and are freely available for use by anyone working with horses or involved in training to promote safer, non-aversive, and more effective handling.

#39 Horses with a voice: Evaluating the impact of training methods on behavior and human-horse relationship. A focus on voluntary-based practices

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Recent equine science describes the horse as a socially complex animal, characterized by shared and situational leadership, capable of learning reliably and willingly through positive reinforcement, and benefiting from agency and self-motivation for the development of healthy, agile movement. These insights challenge traditional training practices based on pressure, punishment and control. This study investigates whether a consent-based training approach, Co-Creational Horsemanship (CCH), better reflects the nature of the horse and influences the human–horse relationship (HHR) differently from traditional equine training techniques (TETT). CCH is an emerging method grounded in the behavioral model, integrating learning theory with principles from ecological dynamics. Central to this approach is the use of consent protocols, which allow horses to actively participate in activities, thereby increasing predictability, perceived control and cooperative engagement. Two groups of horse–owner pairs (CCH vs. TETT) completed a questionnaire and two behavioral tests. A stroking session assessed horses' responses to human tactile interaction. In an obstacle path, horses were invited by their owners to explore novel objects, allowing evaluation of exploratory behavior, refusal responses and interaction quality. Horse personality traits, including anxiousness and sociability, were included as control variables. Results indicate that CCH horses explored novel objects more and displayed fewer refusal behaviors, independently of anxiety levels. During the stroking session, CCH horses showed more human-directed behaviors, reflecting active engagement rather than passive tolerance. Sociability was associated with higher overall communicative behavior, independently of its valence (positive or negative), suggesting that more sociable horses are more expressive but not necessarily more contact-seeking. Training style influenced whether these behaviors were predominantly affiliative or avoidant. These findings provide promising evidence that CCH supports both welfare and agency in horses, opening new directions for ethical and evidence-based equine training, aligning more closely with the horse's natural learning abilities and social dynamics.

Lay Message Horses are complex social animals who learn best when training is clear and rewarding. Traditional training often relies on pressure and punishment, which may not reflect how horses naturally learn and interact. This study compared traditional training with Co-Creational Horsemanship (CCH), a consent-based approach that encourages cooperation. Horse–owner pairs took part in a gentle stroking session, an exploration task with new objects, and a questionnaire. Horses trained with CCH were more curious, refused less, and showed more active interaction with humans. These findings suggest that training methods based on choice and cooperation may improve confidence and overall horse welfare.

#40 Evaluating equine well-being during horse-human interactions using different research approaches

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Training horses to suppress reactive behaviours may lead to horses masking signs of stress that can occur during horse-human interaction. Overlooking indicators of perturbance could impact animal well-being. In our research on horse-human interaction, we evaluated well-being of horses under different environmental conditions, which included participation in therapeutic riding programs, as patients undergoing veterinary procedures, and as co-partners of military and police service veterans in equine facilitated psychotherapy programs. Evaluation of equine well-being in these studies focused primarily on analysis of stress through various measurement approaches. However, recognizing that stress is a construct that can only be measured indirectly, we collected data on both subjective and objective variables across different research scenarios. In our compendium of research activities, we recorded the frequency of behaviours based on stress ethograms, hormonal responses during program involvement that included oxytocin and cortisol, and concomitant autonomic responses based on heart rate variability. Throughout the development of our investigative strategies, we also evaluated the attributes of reliability and validity for the different variables to ensure the integrity of the data, and we unpacked the complexity of measurements representing multiple physiological systems while exploring the dynamics of responses across different measurement domains. Our results showed equine behaviour responses are specific to the stimuli and the individual. While some horses showed ears back and tail swishing during adapted mounting, others were relaxed. Observing behaviours provides essential data for interpreting the animal processing its environment. Moreover, the psychophysiology of behaviour can be explained with Posner's Attention Network Model that describes alerting, orienting, and executive functioning, in which cortisol, oxytocin and derivatives of HRV were activated at each stage, and which contributed to our understanding of stress responses. We conclude that the best way to evaluate equine well-being during horse-human interactions is to measure the presence or absence of stress.

Lay Message Are horses stressed when they are recruited into research and service activities as part of the human-animal partnership? We set out to answer this question with selected measures on the equine participant. Throughout our research, horses responded to specific horse-human interactions by demonstrating unique and distinct behavioural and psychophysiological responses. While some horses showed ears back and tail swishing in selected activities, others treated the interaction with humans in the research environment as a neutral stimulus. We conclude that one of the best ways to evaluate positive equine wellbeing during horse-human interactions is to demonstrate that they are not stressed.

#41 Toward consensus in equine nasal-based acoustic signals: Integrating ethology, welfare science, and bioacoustics

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Acoustic signals provide important insight into the emotional states and communicative behaviors of horses. While some vocalizations such as nickers are well described, non-vocal nasal-based acoustic sounds (NBAS) (e.g. blows, snores, snorts, sneezes, and sighs) remain inconsistently defined across the literature. Foundational ethological texts often associate expulsive nasal sounds with vigilance, arousal, and environmental assessment or mere hygienic functions, whereas more recent empirical studies report some of these sounds in relaxed, exploratory, or socially positive contexts. These apparent discrepancies likely reflect differences in terminology, acoustic structure, and/or contextual interpretation, a problem that may be resolved through objective bioacoustic analysis, rather than disagreement in the underlying behavior. To address this issue, we conducted a collaborative review and synthesis of ethological descriptions, experimental studies, and observational reports spanning housing, ridden exercise, and clinical contexts. Particular attention was given to the acoustic characteristics and behavioral context of commonly described NBAS. A review of five widely cited equine behavior texts and ten frequently referenced peer-reviewed articles revealed clear consensus (>80%) for blows, sleeping snores, and sneezes, but substantially lower agreement for snorts and related nasal sounds. To explore observer classification, twelve NBAS recordings were presented to participants at the 2024 conference of the International Society for Equitation Science. High-arousal sounds showed relatively high observer agreement (80–95%), whereas identification and terminology for other NBAS varied considerably even among experienced equine behavior specialists. We propose a framework that differentiates NBAS primarily by acoustic structure while incorporating contextual modifiers. This framework connects three complementary approaches to understanding equine behavior: classical ethology and ethograms, affective-state and welfare science, and bioacoustic analysis of signal structure. It provides a foundation for future objective acoustic analyses, including collaboration with bioacoustic engineers to characterize NBAS structure and improve classification.

Lay Message Horses don't communicate only with whinnies and nickers. They also produce a variety of nasal sounds, such as blows, snorts, snores, sneezes, and sighs, that may provide clues about how they are feeling. Researchers and horse professionals, though, do not always agree on what to call these sounds or what they mean. By reviewing key scientific literature and presenting recordings to conference participants, we found strong agreement for some sounds but much less agreement for others. Our work aims to clarify terminology and collaborate with bioacoustic engineers to better understand these sounds and what they reveal about horse welfare.

#42 Stress related behaviours did not universally decline as horses learned to avoid an aversive training stimulus

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During training, horses can learn to escape aversive training stimuli (AS) by responding or avoid them by responding to conditioned stimuli (CS) paired with the AS. Twelve horses were trained to respond to a visual CS paired to an AS, in one of two biomechanically similar, but ethologically dissimilar tasks (moving Toward or Away, from taps from a dressage whip (AS, 6 per group). Over two, twice daily 25 trial Learning sessions (100 trials) horses could escape the AS applied to their right hindquarter by making two sideways steps, either Away or Toward, or avoid taps by responding when shown the raised whip (CS). Next, they were exposed to six, once daily uncontrollable Stressors or Control (6 per group, balanced Away/Toward) and underwent a single 30 trial direction reversal (DR) where the direction of movement was reversed. During Learning, Toward horses had a lower probability of responding to the CS than Away horses: Toward 54%, Away horses' 84% ($F=11.661, p=0.001$). During DR, horses shifting from Toward to Away responded more to CS, than those shifting from Away to Toward ($F=32.50, < p<0.000001$). Behaviours varied between Learning sessions: reactions to AS decreased in Away horses as CS responses increased, with no change in Toward horses ($F=5.36, p=<0.0001$). In the final Learning session, Away horses showed increased frequencies of putting pressure on the halter ($F=8.42, p<0.000001$) and handler-directed agonistic head movements ($F=.524$ $p<0.000001$). During DR, Stressor horses performed more whip reactions ($F=37.36, p<0.000001$) and handler-directed agonistic head movements, ($F=18.497, p=0.00018$). These data confirm avoidance learning in horses, but success may depend on the ethological salience of the task. Learning to approach an AS is acquired more slowly than learning to escape it. Exposure to stress may sensitise horses to the aversive characteristics of AS. Even when horses can completely avoid AS, they may still experience training as aversive.

Lay Message Horses will take longer to learn tasks that are alien to their innate behaviour such as moving towards naturally aversive or frightening objects. Exposure to stress may make horses more sensitive to the painful characteristics of cues used in training like whip taps. Even after horses have successfully learned difficult tasks including avoiding direct pressure cues completely, they may still experience training as unpleasant. Trainers should be aware it will take longer and carry more welfare risks when training horses to do tasks the horse finds challenging and adapt their methods to reduce these risks.

#43 Is the barn the most effective classroom? Impacts of educational and reflective interventions on riding students and lesson horses

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Riding lesson horses face significant physical and psychological challenges, potentially exacerbated by a lack of education in lesson students. However, research suggests that increased rider knowledge does not necessarily improve practice or welfare outcomes. This study examined how educational and self-reflective interventions influenced 1) lesson riders' understanding of equine behaviour, and 2) if such interventions reduced stress in lesson horses during riding and handling. Six hunter-jumper lesson facilities each with 5-9 horse-rider pairs (n=47) were assigned one of three treatments: 1) Educational (EDU) – riders took a 12-week online equine behaviour course; 2) Self-reflection (REFL) – EDU + completing a weekly modified Equine Behaviour Assessment and Research Questionnaire (E-BARQ) and Qualitative Behavioural Assessment (QBA) for their horse; or 3) Control. Facility visits were conducted pre- and post-intervention (phase) to collect EBARQ+QBA data and horse heart rate variability (HRV) during grooming/tacking and a standardized ridden test. Learning assessments (LA) were conducted post-intervention to determine participant knowledge of basic equine behaviour concepts. A two-way ANOVA analyzed LA scores and a linear mixed model with repeated measures analyzed HRV data. E-BARQ and QBA data were analyzed using linear and ordinal mixed models. Treatment did not affect HRV ($F(2,7)=1.77;p\geq.2383$), although HRV was higher post-intervention ($F(2,606)=4.17;p\leq.0158$), indicating reduced sympathetic nervous system activity. LA scores were unaffected by treatment ($F(2,37)=1.15;p=.3280$) or facility ($F(5,37)=1.69;p=.1602$). E-BARQ results were not affected by treatment ($x2(4)=6.680;p\geq.1538$), facility ($x2(1)=.536;8p\geq.4637$) or phase ($x2(1)=2.062;p\geq.1510$). However, facility influenced how highly riders scored expressions of specific equine emotions in the QBA ($x2(1)=22.923;p\geq.0001$). While neither treatment impacted rider knowledge or horse HRV, facility impacted QBA scores suggesting differences in behaviours expressed and/or language riders use to describe horse behaviour between facilities. Future work exploring how facility culture influences equine behaviour and riders' understanding of such behaviour may strengthen efforts to facilitate equestrian behaviour change through targeted interventions and education.

Lay Message Riding lesson horses face physical and mental challenges during work, potentially exacerbated by a lack of education in lesson students. This study tested two intervention programs in riding lesson facilities: 1) a 12-week equine behaviour education course; and 2) a weekly reflection on horse behaviour completed alongside the educational course. Neither program affected horses' physiological stress responses, how riders described their horse's behaviour, or their scores on a learning assessment. However, facility impacted how riders described their horse's behaviour, suggesting facility culture influences rider descriptions of equine behaviour and may be an important avenue for facilitating equestrian behaviour change.

#44 Development and operational validation of a four behavioural profile framework for safer horse handling

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Handling-related injuries remain a significant concern in equine veterinary and training environments. Horses commonly described as “reactive” may exhibit distinct underlying behavioural mechanisms, yet such broad descriptors fail to differentiate functional differences. We propose a structured behavioural framework based on two measurable dimensions—locomotor energy and human-directed confidence—forming four profiles relevant to handling safety. The framework was evaluated through two complementary studies. Study 1 examined whether commonly used equine behavioural descriptors align with this two-dimensional structure. A structured literature review (PubMed, Web of Science, Google Scholar) identified 24 descriptors. Equine professionals and students (n = 1,260) assigned each descriptor to one of four predefined profiles based on high or low locomotor energy and human-directed confidence. Multivariate analyses were used to assess structural coherence. Study 2 evaluated the reliability of measuring these dimensions under field conditions. Locomotor energy was quantified using repeated arena-based instantaneous sampling across multiple sessions. Human-directed confidence was assessed through a standardised three-phase approach–halter–lead test, scored from 0 to 6 and evaluated independently by two observers. Repeatability and inter-observer reliability were analysed using intraclass correlation coefficients. In Study 1, Principal Component Analysis reduced the descriptors to two principal components explaining 64.2% of variance, with clustering analyses supporting four distinct behavioural groupings. In Study 2, locomotor energy showed high repeatability (ICC ≈ 0.99), while human-directed confidence demonstrated good to excellent inter-observer agreement (ICC ≈ 0.93), with no ceiling or floor effects. Exploratory analysis indicated a positive association between locomotor energy and human-directed confidence under the present management conditions. These findings support the coherence and measurability of the proposed framework. While not intended to replace existing personality models, it provides a practical, behaviourally grounded tool for anticipating handling responses. Further research should assess its predictive validity in real-world safety outcomes.

Lay message Not all “reactive” horses are risky for the same reason. Some move a lot because they are confident and engaged. Others move just as much because they want to escape. Some stand quietly because they are cooperative. Others stand quietly because they are shut down. This study presents a practical system that organises horses into four clear behavioural profiles based on energy level and confidence toward people. By identifying the underlying pattern, handlers can better anticipate responses, adjust their approach, and improve safety during everyday handling.

#45 Exploration and analysis of embedding evidence-based learning theory into curriculum

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The training of horses using equitation science relies on the correct application of learning theory (LT); however, little is known about how LT is embedded within practical equestrian teaching. Research in coaching and related fields indicates that knowledge of LT is often limited or inaccurately applied, highlighting the need to examine how LT principles are interpreted and enacted in equestrian education. This study aimed to evaluate the experiences of higher education students and experienced educators involved in the practical teaching of LT, exploring their interactions, acceptance, and the challenges encountered, while identifying areas of good practice. Five student focus groups (2–7 participants each), four in-depth individual educator interviews, and four workshop groups of educators (4–6 participants each) were conducted using a semi-structured approach to encourage participants to share their experiences in depth. All discussions were transcribed and analysed using reflexive thematic analysis. Triangulating student and educator perspectives strengthened interpretation and highlighted the extent to which themes were shared across groups. Four higher-order themes were identified. Understanding, Application and Acceptance of Learning Theory - showed that while students understood the concepts, accepting and applying them within entrenched equestrian cultures and their own established habits was difficult. Pedagogical Strategies - highlighted the use of scaffolded teaching, with timing of the release emerging as a key difficulty. Horse Welfare and Ethics - emphasised the role of the horse as a co educator and the need to recognise equine affective states while balancing traditional and evidence-based methods. Systemic Institutional Constraints - noted inconsistencies, terminology confusion, and curriculum constraints, alongside a strong desire for unified, evidence-based industry standards. Overall, students were enthusiastic about LT-informed training, but clearer LT understanding, improved welfare centred practice, and greater curriculum coherence are needed to strengthen future equestrian education.

Lay Message This study explored how well students and coaches understand and use evidence-based horse training methods. We found that while people were keen to use contemporary, science-based approaches, many struggled to put the learning theory into practice because of old habits, unclear terminology, and mixed messages in the industry. Participants also highlighted the importance of horse welfare and the horse's emotional state in practical teaching sessions. Overall, the study shows that clear understanding of learning theory, improved welfare centred practice, and greater curriculum planning would help improve training for both horses and people.

#46 Blue-light masks do not affect the response of young horses in a novel object test but shift heart rate variability to more parasympathetic dominance

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Light therapy is used to address depression, anxiety and sleep disturbances in humans. Autonomic nervous system dysfunction in these conditions may be modulated by light through its effects on cardiac vagal activity, indexed by vagally mediated heart rate variability (HRV). Blue light applied to one eye via masks with a light-emitting diode, is used in horses to advance the onset of ovarian cycles at the onset of the breeding season but their effects on behavior and stress parameters have not been addressed so far. We hypothesized that blue-light masks affect the state of arousal in horses. In this study, three-year-old Warmblood mares either treated with Equilume blue-light masks for 12 weeks (LM, n=5) or left untreated (CON, n=5) beginning on 5 Dec were exposed to a novel object (unicorn inflatable toy) placed in a covered pen before the horse was brought in for 120 min. Salivary cortisol concentration, heart rate and the HRV variable RMSSD (root mean square of successive beat-to-beat differences) and behavior were analysed. Group LM mares focused visually on the object for 69±44 sec and group CON mares for 52±10 sec (n.s.), 4/5 CON and 1/5 LM mares made tactile contacts with the object, suggesting either less interest or more fear of LM mares in the novel object. Novel object exposure induced an increase in cortisol concentration (1.3±0.3 before to 3.1±2.0 ng/ml 15 min after exposure) and heart rate (f44±10 to 120±24 beats/min) with no significant group differences. The RMSSD did not change acutely during the novel object test but throughout the test was higher in LM than in CON mares (p=0.033). In conclusion, prolonged exposure of young horses to blue light was accompanied by an increase in HRV, indicating a shift towards parasympathetic dominance but did not alter their acute response to an unfamiliar novel object.

Lay message Exposure to blue light from head masks with a light-emitting diode increased heart rate variability in young mares, indicating a calming effect on the autonomous nervous system. These mares were also less interested in a novel object in a test compared to control mares without light masks. Results are preliminary but provide an example, how light therapy may affect the emotional state of horses.

#47 Horses did not show evidence of habituation following repeated exposure to a noxious training stimulus

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Trainers sometimes recommend intensifying training cues to counteract habituation, where horses cease responding to stimuli, such as 'dead to the leg'. This advice assumes that increasing pain is required to maintain behavioural responsiveness. Across two studies with different learning contexts but an identical training procedure, 53 horses received “light” whip taps intended to cause minimal pain, to their right hindquarter to cue three lateral steps, after which tapping ceased until the next trial. Study1 (n=41) involved 20 minutes of Exercise, Stress exposure, or Control prior to horses learning to a criterion of three consecutive correct responses. Study2 (n=12, six per task type) required horses to step leftwards, Away from the taps, or rightwards, Toward the taps across 2 × 2 daily sessions of 25 trials (100 trials total). In both studies, all horses acquired the response and taps/trial decreased over time, demonstrating that light taps were sufficiently aversive. Study1 Exercise horses reached criterion in fewer trials (Kruskal-Wallis: χ^2=10.27, p=0.006) but treatment group did not affect taps/trial (χ^2=4.42, p=0.11; mean 10.8, range 0–159). Study 2 taps/trial decreased significantly across sessions (Friedman's: χ^2=470.5, p<0.0001; Session1: 20.65, Session2: 6.3, Session3: 2.6, Session4: 0.8, range 0–200). Toward horses received more taps than Away horses (Mann-Whitney U: 131446.5, Z=-8.4, p<0.0001) but made fewer correct responses (GLMM: F=14.98, p<0.0001) reflecting the difficulty of learning to move toward a painful stimulus. Individual variation in taps/trial reflects differences in acquisition, but all horses completed at least one trial with zero taps. These findings challenge advice to escalate cue intensity during training. That light taps were sufficient to induce avoidance indicates they functioned as aversive sensory and emotional events; absence of tissue damage cannot be taken to indicate absence of an unpleasant experience for the horse. Conventional advice to intensify cues during training carries significant welfare risks.

Lay Message When horses fail to respond to training cues, becoming so-called "dead to the leg", riders may be advised to increase the strength of those cues so the horse responds again. We found that horses learned to respond to and even avoid light cues without needing to increase the intensity or speed of those cues. Horses became more responsive, not less over time. This demonstrates that horses can find even “light” pressure cues aversive and can learn how to avoid them if given the opportunity. This suggests the “light” stimuli caused pain so using stronger cues during training carries welfare risks.

#48 Behavioural reactions of horses (Equus caballus) following the death of their equid companion

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As a social species, it might be expected that horses would show behaviours toward their dying/dead conspecifics. However, there is remarkably little literature on this subject. The aim of this research was to identify behavioural changes in horses who have experienced the loss of a companion equid. An online questionnaire was designed to collect data on the housing and management of the equids, the passing of the deceased equid, and the type and duration of immediate and sustained behavioural changes in the surviving horse. The retrospective survey was completed for 325 surviving horses. Horse owners frequently reported behavioural changes within 24 hours of the companion's death, including changes in arousal (88.96%), alertness to stimuli (72.92%), behaviour directed towards other equids (77.67%) and people (77.64%), and vocalisation (68.63%). Multiple logistic regression models indicate that horses who had shared an affectionate relationship, rather than simply tolerated each other, were more likely to change their behaviour towards humans (friendly vs. mutual tolerance: p=0.029; parental-dependant vs. mutual tolerance: p=0.026) and their excitement to interact with others or at feeding time (friendly vs. mutual tolerance: p=0.023; parental-dependant vs. mutual tolerance: p=0.006). These behavioural changes often persisted for 6 months after the companion's death. Horses who had witnessed this death were more likely to showed changes in time spent feeding (p=0.030) and sleeping (p=0.028) within the first 24 hours after the event. These horses were also more likely to show changes in vigilance (p=0.016) and excitement towards others and/or around feeding time (p=0.004). Whether they had, or had not, spent time with the dead body did not impact likelihood of behaviours in the first 24 hours of loss. However, within 6 months, horses who were not able to spend time with the body were more likely to show changes in vigilance (p=0.033) and/or arousal (p=0.038).

Lay Message Horses may express grief-related behaviours following the death of a companion. These behaviours are impacted by the relationship between the two equids. Indeed, those sharing an affectionate relationship were reported to be more likely to change their behaviour following the death of their companion. Their behaviour was also affected by whether they witnessed the death of their companion. However, being able to spend time with the body may help horses in the long term. The death of another can have negative consequences for the survivor's welfare and our findings may help owners manage emotional well-being better during this difficult time.

#49 Investigation into the individual selection process for young Trotters by trainers: Exploring the perception of behavioral traits

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Every year in France, more than 8,700 trotters are born, and over half do not qualify for racing. They are therefore mainly redirected to leisure riding, breeding, or slaughter. This high rate of horses being trained to be later withdrawn from racing creates human-related issues (increased injury risk, wasted effort, financial losses) and institutional issues regarding the racehorses' welfare. This overview investigated trainers' perceptions of behavioral traits involved in the selection and performance of harness racehorses, and their perception of the behavioral profile of successful trotters, using a structured questionnaire. A structured mixed-method questionnaire, developed based on existing literature and pre-tested, was used to survey seventy-eight trainers on French racetracks. They were interviewed about daily horse management and their selection and performance criteria. They then rated predefined behavioral traits associated with successful trotters across three contexts (handling, training, racing); scores were compared between these contexts using Wilcoxon tests. Results on respect for horses' basic needs is encouraging: 90% of the trainers surveyed report providing daily outdoor access, 77% allow daily social contact, and 79% provide ad libitum hay. Trainers appear to prefer horses that are courageous in races (paired Wilcoxon with Bonferroni correction, $W=4003$, $p<0.001$), calm when handled ($W=2009.5$, $p<0.001$), focused in races ($W=3792$, $p<0.05$), and friendly regardless of the context (Friedman test, $\chi^2=0.08$, $p=0.96$). Regarding performance criteria, behavioral traits were the most frequently cited criterion (62% of trainers), ahead of all other factors, suggesting they are perceived as important for performance. Trainers consistently valued calmness during handling, as well as focus and courage during racing. Although behavioral traits were frequently cited as important for performance, they appear to be underutilized in early selection decisions. These findings highlight the need for objective, standardized tools to assess temperament in young trotters and to better align selection practices with performance-related behavioral traits.

Lay Message This questionnaire-based study shows that behavioral traits are underutilized by trainers when selecting young trotters, although they consider them to influence both racing performance and daily management. Respect for horses' basic needs is encouraging: most trainers provide daily outdoor access, social contact, and ad libitum hay. Trainers rated the successful racehorse as courageous, focused, and friendly. This is the first study to explore trainers' expectations regarding behavioral traits. Understanding these expectations could help provide trainers with objective, standardized tools to assess the temperament of young trotters and better align selection practices with performance-related behavioral traits.

#50 A comparative study: Evaluating opinions of physiotherapy on dressage and showjumping as disciplines within the equine industry

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Physiotherapy is becoming increasingly integrated within the equine industry in order to enhance performance, support rehabilitation and promote equine welfare. Whilst evidence supports benefits of physiotherapy for sports horses, research remains discipline specific and clearly lacks direct comparison between dressage and showjumping. Due to contrasting biomechanical demands, such as collection and spinal flexion in dressage, in comparison to high impact distal limb loading in showjumping, there is limited empirical evidence, evaluating whether physiotherapy is equally necessary across both disciplines. This study aimed to evaluate the opinions, frequency and outcomes of physiotherapy in dressage and showjumping horses. A mixed-methods approach was used; two discipline specific questionnaires were distributed (Dressage, n=21; Showjumping, n=13), collecting data on injuries, physiotherapy usage and perceived physiotherapy importance (1-10 scale). Semi-structured interviews were also conducted with five qualified, practicing veterinary physiotherapists. Pre and post physiotherapy videos were analysed on one dressage and on showjumping horse, each assessed before physiotherapy and after five sessions for subjective review in a separate pilot study. Quantitative data from the questionnaires and interviews were analysed using chi-square tests and independent t-tests, whilst qualitative data was analysed thematically. Dressage respondents reported a higher prevalence of back-related issues (43%) compared with showjumpers (15%), whereas showjumpers demonstrated greater tendon and ligament injuries (38% compared to 19%). The mean perceived importance of physiotherapy was high in both groups but much greater in dressage (SEM=8.9±1.2) than showjumping (SEM=7.6±2.1), suggesting a statistical significance ($t(32)=2.21$, $p=0.034$). This research has indicated that physiotherapy is valuable in both disciplines but addresses differing biomechanical issues. Dressage may demonstrate a greater need for physiotherapy, whilst showjumping uses physiotherapy more for soft tissue rehabilitation. This study may support the need for discipline specific physiotherapy protocols as well as large-scale comparative research, using evidence-based practice in order to enhance equine welfare.

Lay Message Physiotherapy is increasingly used in horse sports to improve performance, aid recovery, and support welfare. This study compared its use in dressage and showjumping horses. Survey results and physiotherapist interviews showed that dressage horses more commonly experience back problems, due to collected movements and spinal flexion required. In contrast, showjumping horses suffer more tendon and ligament injuries because of the high impact forces from jumping. Riders in both disciplines considered physiotherapy important, although dressage riders rated it slightly higher. Overall, physiotherapy benefits horses in both sports but may be most effective when tailored to specific physical demands of each discipline.

#51 The effects of equine-assisted intervention on young adult women with depression and horses

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To address depression among young adult women, equine-assisted intervention has emerged as a promising complementary approach for emotional regulation and stress reduction. This study investigated the psychological and physiological effects of equine-assisted intervention by depression status and whether it induced stress in participating horses. The study was approved by the Institutional Review Board of Kyungpook National University (2025-0569). Twenty female college students were classified into depression (n=10) and non-depression (n=10) groups based on Korean Beck Depression Inventory scores. The intervention consisted of 15 min of pre-counseling followed by 50 min of natural horsemanship-based ground activities. Salivary samples were collected during baseline (B; the mean of –20, -10 min, and immediately before activity), immediately after (A1), +20 min (A2), and +40 min (A3). In the depression group, mean cortisol concentrations were significantly higher at B (0.36 ± 0.04 μg/dL) than at A1 (0.17 ± 0.04 μg/dL) ($p < 0.0001$), A2 (0.15 ± 0.03 μg/dL) ($p < 0.0001$), and A3 (0.16 ± 0.03 μg/dL) ($p < 0.0001$). In the non-depression group, mean cortisol concentrations were significantly higher at B (0.27 ± 0.04 μg/dL), A1 (0.14 ± 0.03 μg/dL) ($p < 0.0001$), A2 (0.13 ± 0.03 μg/dL) ($p < 0.0001$), and A3 (0.12 ± 0.03 μg/dL) ($p = 0.0002$). Oxytocin concentration in the non-depression group increased significantly from B (105 ± 24.1 pg/mL) to A1 (140 ± 24.1 pg/mL) ($p = 0.0315$). Self-report scores indicated reduced stress alongside improved self-efficacy and mood in both groups ($p < 0.05$). In horses, salivary cortisol decreased in the program condition from B (0.11 ± 0.01 μg/dL) to A3 (0.08 ± 0.01 μg/dL) ($p = 0.036$), while no changes were observed in control conditions. The intervention effectively reduced stress in both human groups without inducing sustained physiological stress in horses, supporting the safety and efficacy of equine-assisted intervention.

Lay message Depression is common among women in their 20s. We examined whether interacting with horses could help reduce stress and improve emotional well-being. After a session with horses, participants showed lower stress hormone levels and signs of greater physical relaxation. They also reported feeling less depressed and less stressed, with better mood and confidence. These changes were seen in women with and without depressive symptoms. Importantly, the horses did not show increased stress during the intervention. This suggests that guided horse interactions may support young women's mental health while also maintaining horse welfare.

#52 Preliminary findings: The role of prior equestrian experience amongst incoming equine science students at a United Kingdom university

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Equine Science students enter Higher Education (HE) with varied equestrian backgrounds, ranging from long-term horse ownership to riding school participation. These differing experiences may shape students' motivations, expectations, and engagement with evidence-based degree content. Limited research has explored the role of prior equestrian experience amongst incoming Equine Science students and how it might act to shape their degree experience. These preliminary findings come from a wider mixed-methods investigation exploring factors influencing Equine Science students' degree journeys at a university based in a city. Methods consisted of Phase I - survey questionnaires recruited by voluntary response sampling (n=19), and Phase II - online semi-structured interviews (n=8), both from a cohort of Equine Science graduates from Oxford Brookes University alumni. These preliminary findings report on the information gathered concerning graduates' backgrounds and their motivation to choose a particular university (Phase I). A Chi-square test of independence examined the relationship between applicants' prior equine experience and their primary motivation for choosing a university. A statistically significant association was identified (χ^2 (4, N=19) =10.29, p=0.036). Given the small sample size, Fisher's Exact Test was also considered, confirming the presence of an association. The effect size was large (Cramer's V=0.53), suggesting that prior experience meaningfully influences motivational factors in applicant decision-making. A patterned association was observed, whereby horse-owning applicants more frequently selected a city location for their choice of university, and approach HE as an extension of their existing equestrian lifestyle. However, riding school applicants more often prioritised course content, conceptualising university study as a pathway for professional development and skill advancement. As Equine Science degrees promote evidence-based practice and welfare standards, understanding how prior experience shapes educational orientation can inform learning environments that challenge entrenched practices, foster critical engagement and ultimately benefit equine welfare.

Lay Message The future welfare of horses depends on the knowledge and attitudes of those who care for and manage them. Students entering Equine Science degrees arrive with very different horse backgrounds; some have owned horses, while others have only ridden at riding schools. This research suggests these early experiences might shape how students choose universities and how they approach their studies. Higher education plays a vital role in challenging outdated practices and promoting evidence-based horse management. By understanding students' starting points, educators can better support learning that empowers graduates to make informed decisions improving horses' health, wellbeing, and quality of life.

#53 Horse show factors affecting horsemanship and welfare through the lens of 4-H youth

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Youth are future equine industry leaders. Understanding their perceptions informs efforts to improve horse welfare. A Qualtrics survey administered at five 4-H horse shows preliminarily examined how the show environment influences horsemanship practices and how youth define a “good” horse person. The instrument included an open-choice matrix assessing perceived/witnessed factors and an open-narrative exploring ideal characteristics in youth’s phrasing. Responses (n=104) were analyzed across five disciplines (Hunter, Western, Ranch, Speed, Versatility) and three age groups (JR: 8–10 yrs., INT: 11–13 yrs., SR: 14–18 yrs.) using chi-square, analysis of means of proportions (JMP Pro 18, $P \leq 0.05$) and word clouds to identify differences by age and discipline. SRs more frequently believed parent/trainer pressures (68.1%, p=0.0215), poor prior class performance (65.9%, p=0.0450), and rider expectations (84.1%, p=0.0047) affected horsemanship compared to younger peers, but also witnessed positive effects of classes going well (70%, p=0.008). No significant effects to youth's horsemanship were found associated with the horse's anxiety level from a youth's perception. Across all age groups, 57% reported witnessing external pressures, while reports of internal pressures increased with age. Most youth (71.8%) identified peer encouragement as a positive external influence. Perceived beliefs didn’t differ significantly amongst disciplines, however, witnessed experiences did. Speed riders less frequently witnessed rider expectation’s effects (34.8%) and 61% of Western riders reported trainer pressures were not a factor (p=0.0307). All Versatility riders, with unique perspectives from competing within multiple disciplines, reported witnessing how prior class performance (well, p=0.0144), (poorly, p=0.0153), peer encouragement (p=0.0285), parent/trainer pressures (p=0.0055), and time management (83%, p=0.0468) affected horsemanship. When defining a good horse person, youth emphasized patience, kindness, and respect, alongside sportsmanship, willingness to learn, and valuing positive horse welfare. Although perspectives varied, the shared emphasis on a horseman's/woman's character and welfare highlights areas for targeted mentorship and education to support positive equestrian sport.

Lay Message Youth are future leaders of the horse industry, making their perspectives important for improving horse sport. This study of 104 4-H riders across riding disciplines/age groups found that older teens were more likely to believe pressures from parents/trainers, past class performance, and personal expectations affected horsemanship, with internal pressure increasing with age. Overall, 57% witnessed outside pressures affecting riders, while 71.8% reported peer encouragement had a positive impact. Versatility riders more often observed effects from time constraints, peer support, and adult expectations. Youth described a good horse person as patient, kind, respectful, demonstrates sportsmanship, and prioritizes horse welfare.

#54 Community based participatory research to develop best practices for horses and humans during equine assisted service activities on Prince Edward Island

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Horses are considered effective partners for humans in Equine Assisted Service (EAS) programs because they are social beings, and animals with high intelligence. However, their nature as prey animals may be a risk to both humans and horses in programs. EAS practitioners need to be educated about best practices to provide safe, credible services while maintaining welfare of horse participants. Objective: To develop agreement among EAS providers regarding best practices working with horses and humans. A community based participatory research approach was used to meet the primary research objective. Participants included 7 practitioners offering either EAL, EFP, or both; 2 presidents of equine organizations and 1 executive director of an experiential education organization. Practitioners had 1-4 EAS certifications, each. Principles from certifying bodies including mission statements, core competencies, and codes of ethics were critically evaluated and organized according to common components. Core values of the research group were established through discussion and reflection and subsequently used to produce the final list of best practices for horses and humans. The final list of best practices for horses and humans emphasized safety, respect, competence, honesty, integrity, education and learning and described what this meant in the context of humans and horses. Examples included recognizing horse behaviours and adjusting programs accordingly; respecting goals of the client; matching appropriate horse to client; enhancing personal development through continuing education and ensuring ongoing horsemanship training. Knowledge translation materials were produced which included statements of best practices (posters) as guidelines for EAS providers and their teams, and information to inform the public (pamphlets and technical report). This research produced a level of community intelligence, a community of practice, and an accepted approach to implementation among participants. This was evidenced by post program testimonials of members gaining advanced knowledge, creating mentorships, and eventual professional partnerships for future endeavours.

Lay Message Horses are increasingly being used as partners in equine assisted services to promote human wellbeing. Credible, safe, humane programs are necessary to ensure the public acceptance and longevity of the industry. A community based participatory research approach including practitioners and other stakeholders led to the development of best practices for horses and humans as a move toward professionalism by EAS providers. Through collaboration and communication, the knowledge gap among practitioners and between practitioners and the public was narrowed. A community of practice developed presenting opportunities for mentoring, partnering and future progress in the field of EAS on Prince Edward Island.

#55 Training shapes locomotor behaviour beyond structural differences: Evidence for functional convergence in quarter horses

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Conformation is widely assumed to determine movement quality, athletic potential, and suitability for a discipline in horses, yet objective evidence linking static morphology to functional locomotion remains limited. This study tested whether morphometric differences among trained Quarter Horses were associated with consistent differences in locomotor biomechanics or whether functional organization converged across disciplines despite structural variation. Ninety adult Quarter Horses (30 barrel racing, 30 reining, 30 ranch sorting), all actively trained and competing in their respective disciplines, underwent detailed morphometric assessment (linear, angular, and lever-derived descriptors) and inertial sensor–based gait analysis during straight-line walk and trot at controlled velocities, selected to standardize external conditions and reveal underlying locomotor organization (>7,200 validated strides). Disciplines differed morphometrically in selected angular and segment-length variables, but biomechanical outputs showed substantial overlap across groups. Axial kinematics, spatiotemporal parameters, and limb movement patterns occupied a shared functional space, with within-discipline variability consistently exceeding between-discipline separation. Morpho–functional relationships were explored using PCA, UMAP, Gaussian mixture models, PLSR, and Elastic Net. Morphometric descriptors explained only a modest proportion of locomotor variance ($R^2 \approx 0.15–0.22$) and regularized models retained few structural predictors, indicating that static morphology contributed little to locomotor organization under standardized conditions. These findings suggest that equine movement is not closely constrained by conformation alone but reflects a flexible, experience-dependent motor system shaped by training and neuromuscular adaptation. Functional convergence across disciplines underscores the importance of objective locomotion assessment and cautions against deterministic interpretations of movement quality, performance, or welfare based solely on static morphology.

Lay Message Horses may differ in body shape, but this study suggests that locomotor function depends not only on conformation, but also on coordination, training, and neuromuscular adaptation. Quarter Horses from different disciplines showed some structural differences, yet their movement patterns overlapped considerably when assessed at walk and trot under standardized conditions. This indicates that training can shape efficient, task-relevant locomotion beyond static form alone. Recognising this adaptability may support more accurate performance assessment, better conditioning strategies, and a more welfare-oriented interpretation of equine movement.

#56 Tracking themes in equitation science: A lexical analysis of ISES proceedings, 2005–2025

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The International Society for Equitation Science (ISES) has convened physically or virtually every year since 2005, generating a corpus of peer-reviewed conference abstracts that constitutes a unique longitudinal record of research priorities in applied equine behaviour and training. This study presents the first systematic lexical and bibliometric analysis of that complete corpus, quantifying the relative frequency of key thematic terms across all 20 proceedings volumes (2005–2025), normalised per 10,000 words to correct for variation in proceedings length. Three broad analytical phases emerge. Phase I (2005–2010) centred on learning theory and reinforcement, reflecting the founding mission to ground equestrian practice in science. Welfare appeared at moderate frequency (18–20 per 10,000 words), spiking to 53.3 in 2009 in line with welfare-focused plenary content. Phase II (2011–2018) saw welfare undergo a sustained structural rise, peaking at 74.6 in 2017. Pain emerged as a dominant clinical term (18.5 in 2014; 18.2 in 2018), noseband entered the lexicon in 2011 tracking FEI regulatory debates, and whip reached its peak frequency in 2013 (20.1), preceding Racing Australia reform discussions. Phase III (2019–present) is defined by the embedding of social licence to operate, which first appeared in the 2019 proceedings, confirming a two-year adoption lag from its introduction to equestrian discourse. It surged at the 2020 virtual conference (12.0/10k) and has sustained at 1.7–3.2/10k through 2022–2025, indicating institutional embedding rather than episodic interest. By 2025, welfare had again peaked (74.7) and pain reached its dataset maximum (18.6), confirming that clinical welfare assessment remains the dominant research frame. These trajectories encode clear paradigm shifts: learning theory, once the defining lens, has been progressively augmented by welfare science, pain recognition, and social legitimacy frameworks. Across the proceedings, the ISES archive has consistently anticipated the welfare debates that later entered equestrian media, national federation regulation, and FEI policy.

Lay Message Counting how often key terms appear across 20 years of ISES conference proceedings reveals how the discipline has changed. Early conferences focused on learning theory and reinforcement. By the 2010s, welfare and pain had taken centre stage. Noseband and whip tracked regulatory debates as they emerged. Social licence to operate appeared in proceedings in 2019 and is now embedded across multiple conference streams. Across the proceedings, analysed as a complete corpus for the first time, the ISES archive tells the story of a discipline that consistently anticipated the welfare conversations the wider equestrian world later had to face.

PHOTO EXHIBITION

Horses Herbarium: Seeing the horse beyond equestrian representation

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Horses may be among the most represented animals in visual history, yet much of this imagery is not truly equine but equestrian. We repeatedly see horses configured in relation to human intention — performing, restrained, directed — rather than engaged with the environments that shaped them. In equestrian imagery, an open mouth often signifies equipment rather than feeding; the horse appears as something acted upon, not as a being acting within a world. Horses Herbarium is a photographic project that attempts to move closer to that world. It documents groups of horses in minimally managed landscape featuring plants, substrates, weather. The installation assembles high-resolution photographic sequences in a herbarium-like format, recording foraging, smelling, scratching, exploration, shelter-seeking, and social contact. It does not claim to depict an ideal life for horses, nor to define what horses "truly are," but to reveal behaviours that visual culture rarely foregrounds. Perception research shows that observers often see what they expect to see. Classic demonstrations of inattentional blindness reveal that even salient events may go unnoticed when attention is directed elsewhere, while Muybridge's locomotion studies demonstrated how technological observation can overturn long-held assumptions about horses in motion. In equestrian contexts, attention is typically organised around control, performance, or aesthetics, which may marginalise everyday equine activities. From a teleonomic perspective, these activities reflect evolved functional organisation: motivations to acquire diverse food resources; maintain safety; regulate social relationships; and engage with complex environments. So, documenting horses' relationships with plants provides visual evidence of capacities central to their nature. Selected contrasting images of sport horses are included to highlight how different contexts channel behaviour and expression. Presented as an expanded poster installation, this visual dataset is intended to broaden perceptual frameworks and contribute to scientific discussion about the nature of horses, complementing current interest in free-living and rewilded populations.

Visit the photo exhibition in the exhibition area

ISES CULTURE CHARTER — EVIDENCE, CURIOSITY & RESPECT

The Culture Charter sets out community expectations for members of the International Society for Equitation Science (ISES). It applies to all ISES contexts: conferences, committees, working groups, publications, online forums, and informal professional interactions.

The Charter exists to foster a culture that is psychologically safe, status-aware, and grounded in One Welfare for robust science that can be questioned, debated and refined into practice.

Principle 1. Our Commitment

ISES is a culture of **evidence-based** inquiry, where ideas are evaluated through scientific evidence.

The strength of an idea is determined by:

- Compliance with COMPASS guidelines where applicable
- Methodological soundness and peer review
- Transparency about limitations, uncertainty, and conflicts of interest
- Appropriate use and interpretation of statistics

Quality of evidence guides thinking, and contributions are valued according to the strength of the supporting evidence, fostering an environment where rigorous inquiry and open discussion can thrive.

Principle 2. We Encourage

We encourage members to cultivate:

- **Curiosity**
  Listen to understand. Ask questions such as:
  "What am I missing?"
  "Tell me more about what you are thinking."
- **Continuous Learning**
  Embrace learning as an ongoing process. Growth often involves refining or replacing familiar practices when better evidence becomes available.
- **Diverse perspectives and experiences**
  Embrace a diversity of perspectives and experiences to foster innovation and robust discussion. Lived experience, when integrated with evidence, can inform meaningful questions and enhance understanding.
- **Constructive challenge**
  Question ideas, methods, and interpretations with the goal of strengthening science and improving horse welfare outcomes.

Principle 3. Psychological Safety

We cultivate a culture of contribution through psychologically safe behaviours.

We protect people, not positions. Ideas are open to vigorous challenge; a person's standing in this community is not. Being challenged and feeling uncomfortable when your work is questioned is a normal and expected part of doing science well, not a sign that something has gone wrong.

Core practices:

1. Approach academic exchange with the goal of understanding, not winning.
2. Leaders and peers admit fallibility. Phrases such as "I may be wrong" or "I had not considered that" are normal and welcome.

3. Stay genuinely curious. Ask questions to understand a position before judging it.
4. Actively invite diverse and early-career voices.
5. Appreciate contributions, including dissenting ones.
6. Normalise revision. Celebrate when evidence leads us to revise our positions.
7. Provide multiple ways to contribute. Include written comments, small group discussions, and one-to-one conversations.
8. Acknowledge contributions before critiquing. Start with what is valuable in someone's work.
9. Be specific. Vague criticisms such as "the methods are flawed" are unhelpful; specify what the concerns are and why.
10. Check your tone. Written and spoken tone can be misread. When in doubt, err on the side of clarity and warmth.

Principle 4. Power, Position, and Responsibility

Recognising power differences:
ISES acknowledges that power imbalances may exist based on career stage, reputation, institutional affiliation, and leadership roles. Those with greater power carry greater responsibility for maintaining a learning culture.

a) Leadership accountability

Council members, conference organisers, and established researchers should

- Model the behaviours expected of all members
- Use their platform to amplify marginalised and early-career voices
- Proactively intervene when they witness unacceptable treatment of others
- Receive feedback about their own behaviour with curiosity and reflective practice

b) Status-blind evaluation
Ideas are evaluated on quality of evidence alone, not on who presents them. A student's methodologically sound critique carries the same weight as a professor's, when grounded in evidence.

Protecting vulnerable members

c) Students, early-career researchers, and members in precarious positions must not face retaliation, career consequences, or social exclusion for:

- Challenging senior researchers' ideas based on evidence
- Reporting concerning behaviour

Members who disagree with mainstream ISES positions or Council decisions should receive the same collegial respect and fair consideration as others, provided their conduct remains within these guardrails.

Principle 5. Accountability and Reinforcement

To sustain the culture, ISES will:

- Conduct an annual culture survey on safety, respect, and alignment with evidence-first norms, using findings to improve practice.
- Provide mentorship and modelling for early-career members, including guidance on evidence-based practice, professional conduct, and constructive disagreement.

Principle 6. When Things Go Wrong- Repairing Harm

Even in a community of good people acting in good faith, harm can occur. What defines us is not that we never get it wrong, but how we treat each other when we do.

Accountability is measured by what happens next.

When you cause harm (including unintentionally):

- Listen without defensiveness to understand the impact
- Acknowledge the harm without justification or minimisation
- Apologise sincerely
- Ask what would help repair the relationship
- Change your behaviour going forward

If you have been hurt or unsettled by an exchange:

- Assume good faith first. Most harm in this community is unintended.
- Distinguish, as best you can, between being hurt and being wronged. Robust challenge to your ideas is welcome here and is not in itself harm; being demeaned or dismissed as a person is.
- Say what happened and how it affected you, so that repair becomes possible. Silence leaves the other person no chance to make things right.
- Be open to repair offered in good faith, and to the possibility of a genuine misunderstanding.

When harm has occurred in ISES spaces:

- Repairing harm takes priority over appearing right or protecting reputation
- Council members and leaders model this process, making their own repairs visible when appropriate
- Restoration of relationships, where possible, is valued

Reflection prompts:

1. Did my words or actions leave the other person feeling respected and encouraged, or diminished?
2. Am I challenging ideas based on evidence regardless of the presenter's status, or am I harder on those with less influence?
3. Am I responding to how I was treated, or to the fact that my work is being critiqued in ways that make me feel uncomfortable.
4. Was it the substance that stung, or the manner? If a fair point was made poorly, can I separate the two, taking the point on board while still naming the manner?
5. If repair is offered, am I open to receiving it, or am I holding onto the hurt in a way that no longer serves me or the relationship?
6. If you are uncomfortable with the answers, pause, repair, and reset

Principle 7. Mentorship and Modelling

Early-career support

- Senior members commit to, where possible:
    - Actively mentoring students and early-career researchers in evidence-based practice and professional conduct
    - Creating opportunities for emerging researchers to lead and contribute
    - Modelling constructive disagreement and intellectual humility

Reporting

If you have concerns, please speak with any Council member you feel comfortable approaching.

ISES Culture Commitment Statement

ISES is a community built on evidence, curiosity, and respect. We welcome constructive disagreement, protect the dignity of all members, and commit to following the evidence wherever it leads - because better science ultimately benefits horse welfare.


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SUMMARY

The 21st International Equitation Science Conference is held in Denmark from August 11 – 13 2026.

The presented data and views expressed in all contributions are those of the authors and not of the ISES or the editors.

International Society for Equitation Science (ISES) is a non-profit organisation which aims to facilitate research into the training of horses to enhance horse welfare and improve the horse-rider relationship.

Read more at www.equitationscience.com