

Veterinary clinic

COVER STORY

In his own environment, a horse can find solutions to stress. But under saddle, it can be a different story



No stress



Communicating new research in equine behavioural science could significantly improve welfare and performance. Gemma Pearson MRCVS explains how



LIKE people, horses become stressed when they feel they cannot control or predict their environment. In domesticating and training our equines, it is inevitable that they are going to be subjected to some degree of stress at some point in their lives.

Our job is to minimise this through good training and

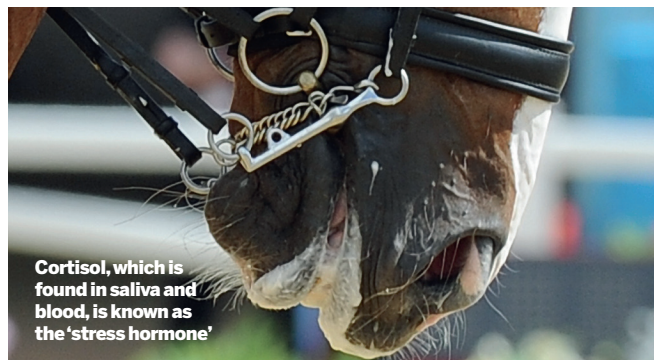
management. Learning how to identify and avoid potentially stressful situations is an important starting point.

Behavioural (or equitation) science has come a long way in recent years. Last summer, Edinburgh University hosted the eighth workshop for the International Society for Equitation Science (ISES).



Horses give each other behavioural clues — such as pinning their ears back — thus avoiding stressful situations

STRESS INDICATORS



Cortisol, which is found in saliva and blood, is known as the 'stress hormone'

TO measure stress, scientists look at:

- ▶ **Core eyeball temperature:** this is measured using infrared thermography cameras. An increase in core eyeball temperature correlates with stress and fear. This is very useful, as it does not require any equipment on the horse, which in itself can cause stress — the measurement can be taken at a distance. Scientists are currently using this technology to monitor stress levels in horses undergoing in-hand training. It is hoped that, in the future, its use will be extended to ridden work.
- ▶ **Salivary cortisol:** cortisol is known as the "stress hormone". Increased cortisol concentrations are used to quantify stress responses in animal welfare studies. It is most accurately measured in blood, but can also be sampled from saliva, which is less invasive.
- ▶ **Heart rate:** heart rate increases as horses become more stressed.

Pictures by Jem Newton, Steve Bardens, www.kevinsparrow.co.uk and www.trevor-meeks-photography.co.uk

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New ways of measuring stress

The latest on the rollkur debate

RIDING a horse in rollkur/hyperflexion requires the application of a restricting rein contact for a prolonged period of time — pressure the horse cannot remove.

A recently published study from Denmark looked at stress responses in 15 dressage horses who were routinely ridden in the hyperflexed head and neck position from medium level to grand prix.

The experiment, which is the first of its kind, measured a variety of behavioural and physiological responses of horses ridden in hyperflexion (position three) and two other common head and neck positions — in a loose frame with no rein tension (position one) and in a “competition” frame, that is with the poll as the highest point (position two).

Each rider spent 10min in walk, trot and canter in each of the three head and neck positions, randomised over the three days of testing.

Heart rate, heart-rate variability, salivary cortisol concentration — which can indicate levels of stress — behaviour and the tension in reins were recorded.



Horses worked in rollkur have huge amounts of pressure in their mouths

Salivary cortisol concentrations were measured 60min before and straight after the test, as well as 5min, 15min and 30min later.

They found that horses had significantly higher salivary cortisol levels when measured after being worked in position three, but that their heart rate was not significantly altered by any of the positions.

The most shocking finding of all, though, was that riders were applying more than 5kg of pressure continuously in position three, when we know 200g is the amount with which most horses are happy.

spur, as well as pressure on the horse's back from the rider's seat. This is still relatively new technology, but it has the potential to help with such things as the application and timing of aids and the asymmetry of leg aids.

Putting theory into practice

WE know that the application and release of pressure — whether from in the saddle or on the ground — plays a fundamental part in humane training regimes.

It is vital that a horse feels relief from pressure. If pressure is applied with both legs to make the horse go forward, as soon as a response is felt the leg should be removed. This way the horse quickly learns that he can remove the pressure by moving forward. He will then feel in control of the environment and be more confident in his work.

Horses are very adept at making associations and we can use this to our advantage. If a rider gives a postural cue such as a slight weight shift before giving an aid from the hand or the leg, the horse will quickly start to associate these cues and respond to them alone.

The rider can then look as if they are riding with invisible aids. Our dressage medallists in London are an excellent example — horses trained this way become light and calm to ride.

Conflict behaviour

IF the pressure is not released when the correct response is offered, the horse will try other ways to remove it, such as bucking, rearing or napping. These are all examples of conflict behaviour.

Horses exhibiting this sort of behaviour are stressed. This has long-term consequences for their health and mental well-being.

Work at the Australian Equine Behaviour Centre has shown a correlation between horses that take longer than three footfalls to respond to an aid and conflict behaviour (measured by kicking out at the rider's leg, tail swishing, rearing and bucking).

By looking out for small indicators of stress in our horses — such as tail swishing, mouth opening, tense or hurried strides or a hollow back — we can begin to recognise when our training is not clear enough.

Rather than blaming the animal for these behaviours, we need to break down the exercise into smaller components to help the horse understand. Then the horse will visibly relax and progress will be made. H&H

One of the main aims of ISES is to communicate new behaviour research to horse owners, riders and trainers in order to improve equine welfare and performance.

So, what have recent findings revealed? And how can we use this knowledge to our advantage and strive for stress-free training?

Stifling nature

AT liberty, if a horse is irritated by a fly, he will swish his tail and if he is hot he will stand under the shade of a tree. Left to their own devices, animals control their environment to remove discomfort.

In the same vein, horses quickly learn that another horse pinning his ears back and snaking his head in their direction is liable to result in a bite or kick.

Stress in these situations is reduced because the horse feels he is able to predict — and as such avoid — a negative experience.

But once we put a saddle on a horse's back, things are different. Horses have to habituate to a rein contact via a bit in their mouths and accept a leg contact against their sides.

One of main causes of stress in ridden horses comes from the simultaneous use of rein and leg pressure. We teach horses that rein pressure means slow down or shorten and our leg means speed up or lengthen. Applying both together is very confusing.

Measuring pressure

SCIENTISTS have recently developed methods of quantifying the pressure we apply to various parts of the horse when we ride.

► **Rein tensiometry:** This is a measure of rein tension, ie how heavy or light a horse is in the hand.



Rearing and napping can be stress responses

One of the main causes of stress in ridden horses is the simultaneous use of rein and leg pressure

It can be used with a small traffic light system on the horse's poll that gives a rider real-time feedback on how much rein tension is being applied. It is important when assessing the effect of varying degrees of rein contact and different head positions on a horse's stress levels.

Research from Belgium and Australia conducted about five years ago showed that most horses are happy with around 200g of pressure in their mouths, although obviously there are individual variations.

► **Pressure testing:** scientists have developed special pads to measure how much pressure is applied from the rider's leg or



Horses seem happy with up to 200g of pressure in their mouths, though the lighter the hand the better