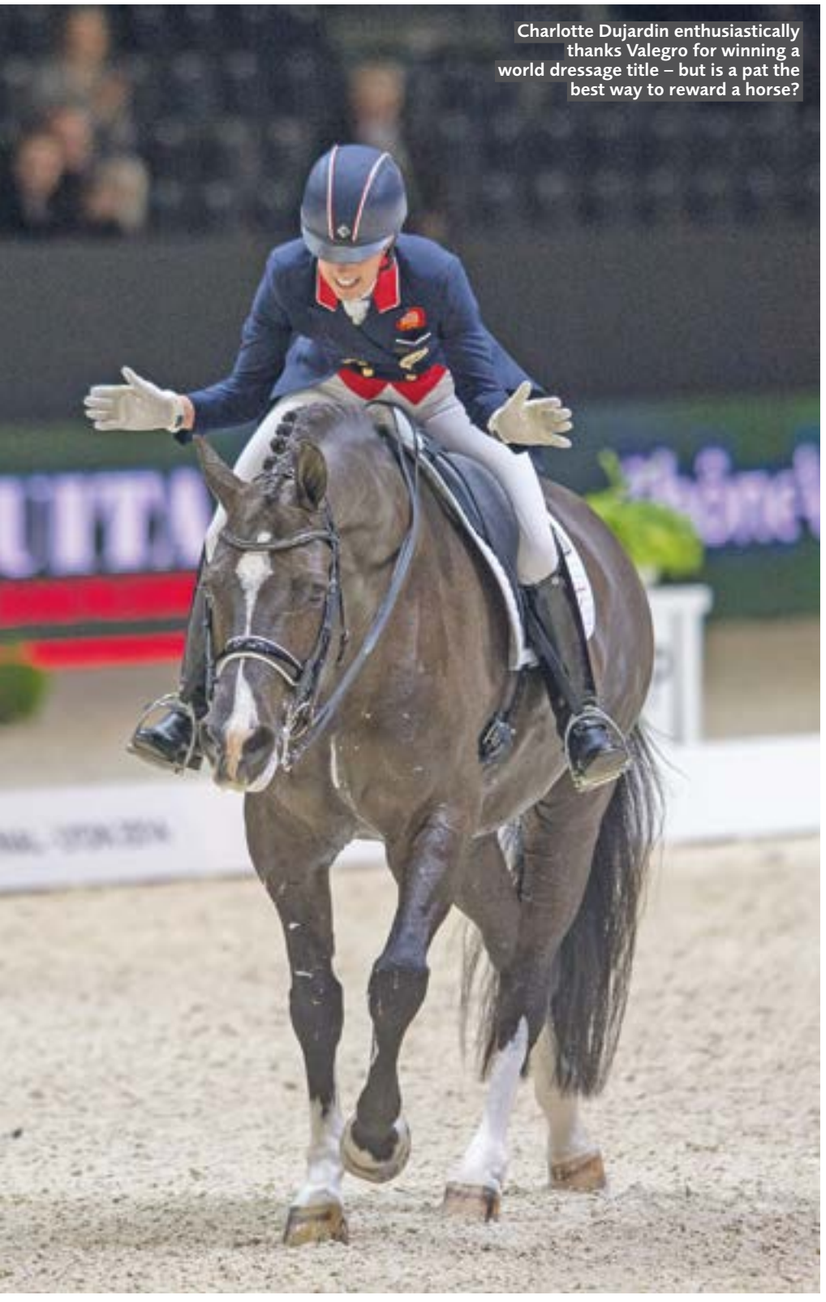
Appliance of science


Charlotte Dujardin enthusiastically thanks Valegro for winning a world dressage title – but is a pat the best way to reward a horse?

Key findings of research projects that aim to improve horse welfare and rider safety have been presented at an international conference. Justine Harrison was there to find out more…

The world's leading equine scientists and researchers gathered in Denmark last month to share and discuss the findings of their latest projects.

They were attending the annual conference of the International Society of Equitation Science (ISES).

ISES is a global organisation that promotes research to raise welfare and safety standards in the equestrian industry and improve the horse-human relationship.

According to Justine Harrison, an equine behaviourist and regular writer for *Horse magazine*, the 2014 event offered a packed programme and covered a wide variety of issues.

"There was such a wealth of topics being discussed, from the use of elastic inserts in reins to the size of racehorse hearts," says Justine.

"Issues surrounding stress in horses were high on the agenda, and there were presentations on equine behaviour, welfare, riding and equine physiology."

Here, Justine reports back on some of the topics that were up for discussion:-

The right reward

We often see riders slapping their horse on the neck enthusiastically at the end of a showjumping round or dressage test, but is this the reward we think it is, or could it cause them discomfort?

A team at Nottingham Trent University investigated the effects of patting and wither scratching horses when ridden or being handled.

Footage of 16 competitors in the dressage Grand Prix at the 2012 London Olympics was analysed to see how and when the riders patted their horses, and how they reacted.

Fifteen riders patted their horses, with 12 continuing to do so for over a minute.

A significant percentage of these pats resulted in the horse reacting.

Most commonly, the horses accelerated – sometimes they would change gait from walk to trot.

This could indicate the horses may find the patting unpleasant, or that they have taken the opportunity to quicken because the rider has taken their hands off the reins.

In a second part to the study, a group of five well-handled riding school ponies and five relatively un-touched rescue horses were patted or scratched four times, for 30 seconds at a time. The study was filmed and the horses' behavioural responses were noted.

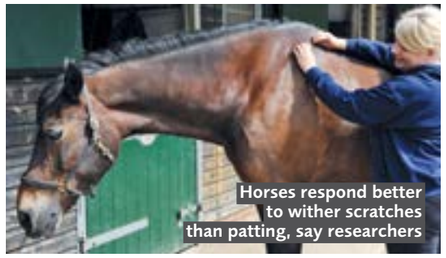
Patting resulted in little behavioural reaction.

However, wither scratching seemed to be more effective as a reward to the horse.

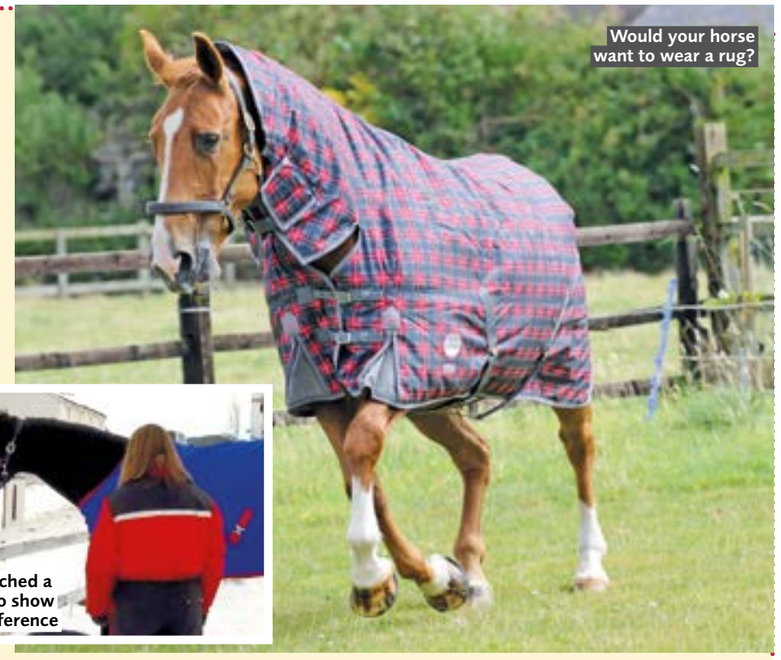
Some lowered their heads, moved their upper lips and tried to mutually groom the handler – all responses similar to those seen in positive horse-to-horse interaction.

The researchers concluded that riders and handlers should be encouraged to scratch rather than pat their horse as a reward.

Research team: Emily Hancock, Sarah Redgate and Carol Hall of Nottingham Trent University.


Horses respond better to wither scratches than patting, say researchers

Shall I get your coat?


Would your horse want to wear a rug?

Owners and riders often worry whether or not they should rug up their horses and some believe the overuse of rugs is a welfare concern.

This is because natural behaviour is compromised and the horse is unable to regulate his own temperature via 'piloerection' – where tiny muscles in the skin contract and raise the hair, trapping air within the coat. Horses are also unlikely to mutually groom when they have a rug on.

Researchers in Norway decided to investigate whether horses prefer to be rugged or not – by asking the horses themselves.

They touched a symbol to show their preference

Twenty three horses – including warmbloods and coldbloods – were trained to touch symbols representing 'blanket on', 'blanket off' or 'no change', to indicate their preference.

Their choices were recorded in different weather conditions, including sunshine, wind, rain, snow and temperatures ranging from -15 to 20 degrees centigrade.

They were outside for two hours before being given the opportunity to alter their rug status.

The results showed that the individuals were consistent in their responses, but unsurprisingly their preference changed according to the weather condition.

Most horses chose to keep their rugs on during days with wind, rain or sleet and requested their rugs were removed when the sun came out and the temperature rose.

Generally, the coldblooded horses preferred to stay rugless, compared to the warmbloods.

Research team: Cecilie Mejdell of the Norwegian Veterinary Institute, Turid Buvik of Trondheim Hundeskole, Grete H.M. Jørgensen of Bioforsk Nord and Knut E Bøe of the Norwegian University of Life Sciences.

Influences on rider position

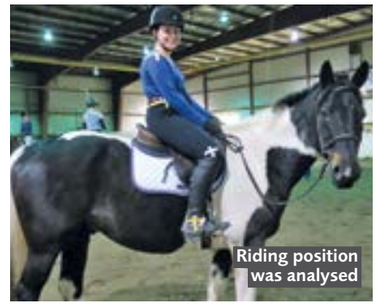
Riders are traditionally taught that the ideal position is vertical alignment through their ear, shoulder, hip and heel and that equal weight should be distributed on both sides of their body.

Using this posture means the rider can give clear, correct aids to the horse.

An unbalanced rider may sit more heavily on one side and give unclear and confusing signals.

This can lead to the horse becoming frustrated, confused and crooked when ridden, impacting on his welfare.

Equine scientists in France and Canada have been researching whether being left- or right-handed affects a rider's position.


Riding position was analysed

For their study, 25 female riders had markers fixed to their helmet, shoulders, hips, knees and ankles. They were then filmed riding in a straight line at walk, trot and canter.

The videos were analysed and the results showed the position of left-handed riders was closer to the ideal alignment than those who are right-handed.

At halt, the position of all riders was close to the ideal, but once the horse was moving they differed in their head, leg, knee and chest positions on each side.

Right-handed riders leaned more forward, carried their legs further forward, tilted their


In halt all riders were close to the ideal position

head and twisted their torso to the right more than their left-handed counterparts.

Left-handed riders looked down a little more and put more weight in their right heel.

Another study, carried out in Germany, looked at the influence of human and horse laterality [the use of one hand or side in preference to the other] in competition results and on the risk of injury.

It showed ambidextrous riders seem to be injured less. Also those who are left-handed and ambidextrous ride at a higher level and are more successful in competitions.

Research team: *Study one:* Anaëlle Faouën from Agrocampus Rennes in France and Katrina Merkies from the University of Guelph in Canada. *Study two:* Sandra Kuhnke and Uta König von Borstel from the Universities of Kassel and Gottingen in Germany.

Identifying cross-country risk factors

A team from a UK college set out to discover the factors which increase the risk of having a cross-country fall.

They collected data from over 2,000 horse and rider combinations in Novice, Intermediate and Advanced-level one-day events, between 2003 and 2012.

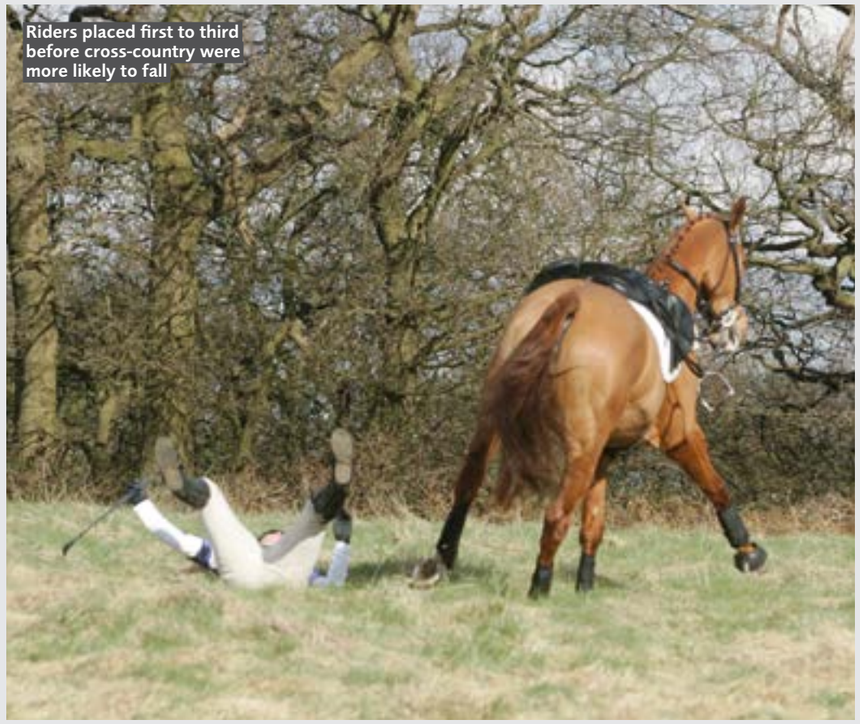
The only significant factor that predicted a fall was the standing of the horse and rider before their cross-country round.

Riders in first, second or third place before going cross-country were significantly more likely to have a horse fall than competitors in any other position.

"If a rider is in a top three placing at that point, they may be inclined to ride more competitively and take more risks," says study team member Heather Cameron-Whytock.

Heather hopes to do further research into the speed of approach to a fence, ground conditions and fence types.

Research team: Heather Cameron-Whytock and Charlotte Brigden from Myerscough College, Lancashire.


Riders placed first to third before cross-country were more likely to fall

Early learning

According to a Danish riding instructor, if you want to change the way people ride, you should start with beginners.

Mette Hald Rasmussen teaches children the principles of 'learning theory' – the science of how animals learn – when they start to ride.

Not only does she instruct children how to ride their Shetland ponies, she shows them how the ponies react to their aids.

Delegates attending the ISES conference visited Mette and her pupils to watch the exercises she uses in lessons:-

CATCH ME IF YOU CAN

Here, the children learn what motivates a pony and how to approach them correctly.

They catch their pony using a technique the ponies have already been taught – to come to the sound of a whistle.

When the whistle is blown the pony approaches and the child rewards him with a food treat for being caught.

This teaches the children that ponies can respond to sound signals and the importance of rewarding correct behaviour.

THE BLINDFOLD GAME

A fun exercise, the focus is to show youngsters how to give rein aids correctly.


Playing the blindfold game


Delegates watched the children's lessons

Working in pairs, one takes on the role of the pony. They are blindfolded and given a pair of reins to hold.

Their partner – the 'rider' – walks behind and guides them with the reins.

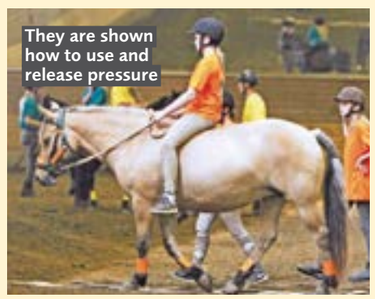
Each child learns how best to use and release pressure when turning and stopping.

ADVANCED REIN HANDLING

The children learn to make a plan, to focus on achieving it and guide their pony to exactly where they want to go.

The challenge is to follow a course, giving the pony precise signals and releasing pressure as soon as he does what he is asked.

It could involve walking the pony to a bicycle tyre on the floor and stopping with the front feet inside the circle, or following a set path.


They are shown how to use and release pressure


Learning to fall

FALL COACHING

Mette believes it is important to take the fear out of falling off and to train the body to reduce the risk of injury.

In their lessons, the child halts their pony between two mattresses on the floor and a helper holds the reins.

The rider hugs their arms around their body, tucks their chin down, falls onto the mattress and rolls safely away.

It helps the child learn to fall off safely and the pony becomes accustomed to the rider making sudden movements.


Coloured horses were involved in fewer near misses on the roads

Coloured horses "safer on roads"

Everyone knows that hi-vis gear can make you more visible on the roads – but the colour of the horse you are riding could also have an impact on your safety.

A group of equine scientists at Duchy College, Cornwall, discovered that riders were less likely to have a near miss on the roads if they were riding a "broken coloured" (piebald or skewbald) horse.

Over 350 riders completed a survey and provided information on horse colour, whether they were wearing fluorescent or reflective equipment, if they were using lights, the location of their ride, the time of day and season.

"Horses of a broken colour had significantly fewer near misses than horses of a block colour," said Rose Scofield, who presented the findings at the conference. "Using lights also reduced the risk of a near miss."

Rose added that the results relating to coloured horses may be due to the way the human eye recognises colour and brightness.

"In bright sunshine, fluorescent or reflective equipment may be camouflaged by shadows or sunlight, so pure black and white show up better because of the contrast," she says.

Near misses were more likely to occur in summer and in the early morning.

Research team: Rose M Scofield, Hannah Savin and Hayley Randle from Duchy College Equitation Science Academy, Cornwall.