

# Science in the saddle

From rein sensors that measure pressure to a girth monitor that records performance, fresh technology can improve our training finds **Andrea Oakes**

**TRAINING SPECIAL**

Could holographic jumps be the way forward for showjumping in the future?



**I**T'S hard to remember a time without tweets, texts and Facebook notifications, when the vet wasn't on speed dial and applying for a show schedule meant sending a stamped, self-addressed envelope.

Technology may have transformed the way we manage our equestrian lifestyles, but what about when we're in the saddle? Good horsemanship has traditionally relied upon natural feel and a trained eye. Can technology really improve the way our horses perform and how we ride them?

"There's definitely a place for technology," says dressage rider and trainer Wayne Channon, who has trialed a number of innovative new products, including the Centaur Rein Tension Device.

The device, designed by Dutch dressage trainer and vet Menke Steenbergen, consists of lightweight sensors placed between the reins and the bit rings. These sensors measure the tension exerted on each rein and display the amount of "pull" through a series of coloured lights on either side of the horse's browband.

"This provided immediate, consistent, visual feedback," said Wayne. "It made a major difference and was quite unlike normal teaching. The rider could see the amount of pressure in each hand and I could ride and demonstrate its effect."

While the current model displays feedback on a computer screen at the side of the arena, an improved version of the original prototype with the browband lights should be available shortly for between €300-400 (£250-335).

Advanced technology that provides instant feedback on your riding skills is intriguing, often expensive and not so readily available. There are more affordable ways, however, of improving performance.

## **Caught on camera**

VIDEO analysis is a great way to improve your technique. Better, cheaper video cameras have made filming much easier — many phones now produce acceptable quality footage — yet the age-old problem of finding a willing volunteer to hold the camera remains.

But things are set to change with a range of exciting developments.

The Soloshot tripod promises to be your personal robotic cameraman. Just fix your camera to the top, press record and the tripod



The Centaur Tension Device has lightweight sensors between the bit rings and the reins that measure the amount of 'pull' on each rein

will work in conjunction with the waterproof and shockproof armband you wear to track you as you ride.

For outdoor use only, Soloshot has an impressive 600m range and will pan at 40° per second – the manufacturers claim it has tracked a car travelling at 230kph [142mph]. The 5hr battery life will capture no end of those flying change sequences.

Soloshot retails at around £250, but the more expensive Move 'N See system automatically reframes, pans, tilts and zooms for a more professional result. The Move 'N See armband also enables you to control filming by pausing and restarting.

### Analyse this

WHILE the idea of gait analysis is not new, its practical application for training purposes is becoming more sophisticated.

The Pegasus system comprises four brushing boots, each with a pocket holding a sensor that measures stride length and duration. This data can later be extracted and analysed to build a picture of movement.

The tiniest changes in locomotion – often not visible to the eye and imperceptible to all but the most sensitive of riders – can be detected.

Already popular in racehorse training yards, the system has been used in showjumping for analysis of warm-up and performance. But while the dressage world has been slower on the uptake, Diana Hodgins of Pegasus feels this is where many benefits lie.

"You can lead or lunge your horse and then see how your riding affects him," she explains. "Is he moving uniformly and symmetrically? Many people don't know how they're affecting stride duration when they ask their horse for extended gaits. This will help you understand what your horse does and what you do to him."

Hiring a trained representative to analyse a yard of 16 horses costs around £400.

Alongside his own work in gait analysis, Russell Guire of Centaur Biomechanics has pioneered a system enabling accurate analysis of rider position and technique.

During a 45min

**Set up the Soloshot at your arena side to record your schooling progress**

training session (starting at £45) the rider wears a jacket featuring strategically placed stripes.

Russell uses high-speed cameras that capture movement at 300 frames per second – 20 times faster than the human eye – to film the rider in action, before analysing slow-motion footage with cutting-edge software.

The angle of the jacket stripes reveals any posture and symmetry problems that can be worked on before the rider is filmed again.

Penny Haynes, chairman of Invicta Riding Club in Kent, recently organised a session with Russell for club members.

"My daughter is training a six-year-old warmblood gelding, so it's important that she gets her position right to help him sort himself out," says Penny. "We saw a direct improvement in her position and how the horse was going."

"Many of us have problems with posture and straightness, perhaps collapsing at the shoulder or hip, but these jackets – and gloves, too – make it immediately obvious."

### A competitive edge

EQUINE fitness is an area particularly suited to the appliance of science. Human heart rate monitors have already been adapted by Polar Equine for technically minded eventers to measure a horse's exertion levels during exercise, as well as his resting and recovery heart rates.

But a company called Gmax is developing a girth monitor capable of producing instant and precise measurement of factors such as heart rate, split times and stride length.

Developed in the highly technical worlds of Flat racing and endurance, the device records and displays live data as the horse works – by radio link to the trackside trainer and to the rider, or to remote viewers via the internet.

"Live data allows the trainer or rider to associate what they see and feel with what the numbers are telling them," explains Gmax designer Will Bradley, who estimates wider-scale availability next year. "There's potential for it to be used in other equestrian disciplines, such as eventing, and for the data to enable the calculation of unique fitness profiles for individual horses."

### Bringing training home

TECHNOLOGY can help with your training too. Some of the following ideas have been around for a while but could be the answer if you live too far away from your favourite trainer or

## Appy days

The growth in equestrian apps for smartphones and tablets gives instant and inexpensive access to training resources.

► IN the free *H&H/NAF Five Star* dressage training app, Michael and Maria Eilberg take you through their favourite exercises for halt/rein-back, walk, trot and canter in a series of 15 short videos. Download at: [http://app.lk/NAF\\_FiveStarDressage](http://app.lk/NAF_FiveStarDressage)

► *EQUI TEMPO*, (£1.49, iTunes) helps you maintain a consistent rhythm. You can listen to this ticking metronome through headphones or an arena sound system as you ride, working to an average beats-per-minute setting for each pace or fine-tuning its speed to suit your own horse.

► *101 Dressage* and *101 Schooling* (£13.99 each, iTunes) bring step-by-step schooling exercises to your fingertips via your Apple iPhone, iPad or iPod Touch. Complete with images and instructions, you can plan a schooling session on all areas of flat work.

► Among the apps helping event riders keep track of training data and apply it to their preparation are *CourseWalk* (£6.99, iTunes) and *CrossCountry* (£5.99, iTunes). GPS technology allows users to map and measure cross-country courses, identify minute markers and add photos of fences.

lack the necessary funds for a lesson. Jaïne Bailey, a recent winner at advanced level dressage, turned to YouTube to teach herself some of the more difficult moves.

"I've found all sorts, including a video by David Hunt where he put a bottle of pop on the floor to help you ride accurate pirouettes," she says. "It opened my eyes to just how simple it could be. You don't need to spend money on training all the time."

Since converting from showjumping to dressage, Lucy Day has used the iRide range of audio training downloads. Starting at around £9.99, these sessions by top riders including Isobel Wessels and Amy Stovold cover the



Pegasus brushing boots register whether your horse is moving uniformly and symmetrically



Russell Guire of Centaur Biomechanics has developed a jacket that helps analyse rider position and technique

basics of training right up to advanced level movements.

"It has totally focused my schooling sessions," says Lucy, who has since qualified for the prelim winters. "My scores have improved from 60% to more than 69% at a time when I couldn't afford lessons."

For a more interactive approach, top showjumper Billy Twomey is about to launch an online lesson service. Just upload footage of yourself jumping and Billy will analyse the action and let you have his suggestions.

You can even compete without leaving the yard. The online competition site Dressage Anywhere judges classes and training tests from video footage and is licensed to use British Dressage (BD) scoresheets.

"I used a training test to gauge whether I was ready to move up from novice to elementary," says Jenny Towers.

"I received quick and very detailed feedback from a BD List One judge.

"My ex-racehorse Soft Gold is not a classic dressage horse, but the experience gave me the confidence to go out and ride the same test at an affiliated show three weeks later."

As a self-confessed "gadget man", event rider Paul Tapner has always been keen to explore the benefits of technology in training. His educational video series Training with Taperz is available with HorseHub, a free app with additional pay-per-download content from some of the world's top trainers.

Paul also trailblazed the use of head cams across country.

"It's taken a while to figure out the training

benefit of a head cam, but it is useful with a number of different horses and riders over the same course for comparing line and speed," explains Paul, who analyses multiple rounds on a split-screen.

"There can be a massive difference, even with two horses under the same rider.

"Technology tends to quantify in a scientific or digital way what good horse people already know," he adds. "The challenge is to make value out of it for people who are maybe not so naturally gifted."

While there are no shortcuts to good technique, developments such as these are proving themselves a creditable addition to the training repertoire.

With so much affordable innovation now available, surely we'd be mad not to ride the technology wave? **H&H**

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## Are you serious?

SOME ideas will need a little more work before they make it to the yard...

### Holographic jumps

THE Popular Science website proposes a novel way to prevent jumping falls — computerised bases on the ground that project holographic obstacles in place of physical ones. If the horse breaks an infrared beam on the edge of the obstacle, the system alerts both judges and crowd. Visit [www.popsci.com/technology/article/2012-07/look-summer-olympics-2020](http://www.popsci.com/technology/article/2012-07/look-summer-olympics-2020)

### Airbag or helmet?

HATLESS riders could become a common sight once again if the revolutionary Hövding bicycle "helmet" or collar is ever adapted for equestrian use. The collar contains an airbag that inflates to provide superior shock absorption in the event of an accident.

Could the Hövding bicycle 'helmet' inspire riding hats of the future?



You may soon be able to build up a fitness profile of your horse using the Gmax heart monitor

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