

Thermography uncovered

Thermography is being used more and more across the UK, but how useful is it? We find out more about this new diagnostic tool and the role it has to play in the horse world

hermography has primarily been used in veterinary medicine to assist lameness investigation, but more recently it's being used for other applications where the results are more inconclusive.

The process is 100% safe and simply involves taking a series of images of your horse and can normally be done at your own yard.

There are two types of thermographic testing, industrial and medical grade. For an accurate diagnosis it's crucial the correct type is selected. Industrial technology was originally developed for military/domestic applications, however this is now sometimes used on horses without any veterinary interpretation. Medical grade technology is registered and approved for use in human medicine. Results with this grade of technology are provided by veterinary specialists and it's this technology that's now available from many veterinary practices.

It's important to remember that thermography is not a stand-alone diagnostic. Where X-ray and ultrasound are tests of structure, thermography is a test of physiology and measures the body's response to a condition. When

applied correctly as part of a veterinary investigation, thermography has been recognised as a useful tool in the early identification of musculoskeletal and neurological injuries, especially in cases of non-specific (and difficult to diagnose) lameness.

Vets have also found it beneficial when monitoring response to treatment and recovery. Thermography is one of the most difficult diagnostic tests to interpret accurately and a trained vet is needed to provide results which your own vet can work from. Despite images being so visual, heat doesn't always equal dysfunction - very often it's the subtle changes which indicate a problem. It's essential that thermography images are read by trained vets - they're no different from X-rays or an MRI which

need interpreting by your vet.

Catriona Shaw, BVM&s DBR OV MRCVS from Hillcrest Animal Hospital, says: "I can't stress enough the importance of the scans being viewed for results by a qualified veterinary surgeon. This method of diagnostics needs to be used the same as you would X-rays, to ensure you gain correct treatment and maximum benefit from the procedure."

When using thermography, remember:

• Thermography cannot see structure and won't replace anatomical tests like X-ray, ultrasound and MRI

• Thermography isn't a stand-alone diagnostic, and your vet will need to take the investigation further to confirm scan results, just as they would with other diagnostics

 Interpretation is key - all results must be reported on by a vet who is trained to

SyncThermology

SyncThermology is currently the only company in the UK and Ireland using medical grade technology. It has a team of veterinary thermographer technicians who collect the scans and data, before sending it to their team of vets who are trained to read this type of technology. A full veterinary report is produced and

read this technology, and for clinical work medical grade imaging should be used

• Saddle testing isn't a strong application for this technology. You should always call a saddler first. More research needs to be done on this as we've confirmed that Pliance testing and thermography don't correlate at this time (see following pages)

sent to your practice so your vet can work with you on the best course of treatment. Screen prices start from £80 for region scans to £480 for full body assessments. Insurance companies can cover the cost if it's referred by your vet. For more information, visit www.

synthermology.co.uk

When to use thermography

1. TO ASSESS NON SPECIFIC LAMENESS

Non specific and difficult-to-diagnose lameness is one of thermography's main contributions to veterinary medicine. DITI (digital infrared thermal imaging) can help isolate the primary dysfunction as well as detecting secondary conditions which may go unnoticed. Both soft tissue and bone related conditions can be highlighted.

2. FOR PREVENTATIVE CARE

Thermography can detect abnormality within tendons and ligaments two to four weeks before structural lesions are present. Its ability to measure inflammatory processes helps to localise the initial stages of breakdown and provides a method of preventative detection. It's also helpful when reviewing early joint changes.

3. TO OUANTIFY PAIN

Thermography is one of the only tests that lets you quantify your horse's subjective feeling of pain. This can be helpful when evaluating complaints that may be related to behaviour.

4. TO MONITOR RECOVERY

Many vets use thermography to monitor the response to treatment during rehabilitation. Thermography can measure the site of injury while keeping an eye on any secondary issues that may be developing due to uneven gait.

OVER THE PAGE Find out what happened when thermography was put to the test in a recent study

Testing the boundaries

Earlier this year the Society of Master Saddlers (SMS) and the Animal Health Trust selected SyncThermology to embark on a study which has effectively highlighted the limitations of thermography. The study set out to discover whether thermal imaging cameras can help detect problems in your horse's saddle fit and on the day of testing Your Horse Buyers' Guide editor Allison Lowther went along to find out what

happened and more importantly what the passion for accurate testing. end results showed.

"The plan for the day was to carry out a direct comparison of thermography versus the Pliance system, where a mat with more than 200 sensors is placed under the saddle directly on the horse's back, and then sends readings to a computer via Bluetooth," says Allison.

"Throughout the process I was struck by the team's attention to detail and

"Their main aim was to improve the knowledge of both horse owners and saddle fitters, as well as the welfare of our horses, and the results were really interesting - to some of you they may even come as something of a surprise."

Read on for important background details, an explanation of the testing process and (over the page) the results of three horses tested on the day.

Background details

The Society of Master Saddlers (SMS) and SyncThermology, previously known as Equiscan, joined forces to undertake the ground-breaking research we're reporting on here, to see if thermography can be used to assess your horse's saddle fit.

Thermography is a proven tool for assessing the health of horses' backs, but how do thermographic images compare to the results produced by the SMS' Pliance pressure mapping system? This was a study SyncThermology was keen to take part in, as staff there are finding increasing numbers of horse owners are enquiring about saddle tests. Although offered as part of a full body evaluation, no standalone saddle test is currently available.

SyncThermology was selected for the study as it provides medical grade thermography that's registered as a screening device, just like an X-ray, ultrasound or MRI. The company's thermographers don't evaluate the scan themselves - all results are provided by its team of vets who are trained to read thermography. When trying to interpret images by eye, the wrong conclusion is often drawn, so specialist veterinary interpretation is needed to come to the right ones.



On the day a strict protocol was followed with each horse to ensure the accuracy of results. Six horses were assessed and each was put through a number of tests. At the start, each had a full set of thermography images taken - this included the neck, body (from both sides) and the hindquarters from the side and behind. Next came a timed lungeing session of walk for two minutes, trot for two minutes and canter for two minutes on both reins. No tack was worn for the lungeing so the horses could be assessed for any conditions that were exercise





assessing saddle fit was put to the test

'The aim is to improve the knowledge of both horse owners and saddle fitters'

Thermography



The tests explained



induced, rather than saddle related.

After lungeing, further thermography images were taken. Finally, for this part of the testing, each horse was ridden again for a set period of time in walk, trot and canter on both reins. More images were taken, including the underside of the saddle, to assess the fit of the saddle. All these tests were carried out indoors.

At the end of the thermography testing, it was time to head outside for the Pliance and biomechanics testing. As we mentioned briefly earlier (opposite page), this is a sensor mat that's placed under the saddle directly on the horse's back.

As each test is being carried out, the readings are analysed and displayed as three moving graphs and colour images on the computer. 'Hot' red or pink areas indicate harmful pressure points, and the Pliance system can gather data at all paces and when the horse is jumping.

In a bid to keep both sets of test as equal as possible, the same size area was used outside and the same ridden tests done - namely two minutes of walk, then trot and canter on both reins.



The results

Six horses were tested on the day, and the results from all six were interpreted by each specialist and, several weeks later, these results were talked through and conclusions drawn. The findings from three of the horses which we give here are representative



Skippy

Skippy has a saddle which fitted well when he was stationary, but moved to the left when he was ridden.



Thermography results showed there was an increase in temperatures on the left side of the saddle panel.

The Pliance results (left) showed higher pressure at both sides of the wither and at the back of the panel on the right side, which correlates with Skippy's saddle moving to the left. This meant that, visually speaking, the thermographic imaging (below left) was misleading as the heat did not reflect the pressure that showed up in the Pliance readings.



On the lateral views of the hindquarters, the thermography did highlight that there was bilateral inflammation in the hamstring region, showing tightness in this area. This condition was later reviewed by Skippy's vet.

Stan

Stan's saddle fitted well when he was stationary, but, because he has a large right shoulder, his saddle was pushed to the left when he moved.



The thermographic imaging detected a slight imbalance to the left panel of his saddle.



The thermographic images appear to say that the saddle has four point panel contact, which it doesn't. If you used just these results to assess whether his saddle fitted, this would give an inaccurate result. Thermography did detect muscular tightness in the neck and cold areas developed in the back post lungeing.

YOUR HORSE FEBRUARY 2013





When ridden with the Pliance system, increased pressure showed on the right panel towards the front of his saddle. This result tallies with the comments of the saddle fitter - interference caused by his large right shoulder.

Buster

On this occasion Buster wore a very old monoflap saddle, which is a couple of gullet widths too narrow for him.



What does this all mean?

As a result of the day's testing we can report that: • Thermographically there's no indication that heat equals pressure

• Thermograms of the underside of the saddle are misleading. If they were followed without a professional saddler's evaluation, interpretation could indicate issues on the opposite side to where the problem actually is

• Thermographic images of the saddle panels are too misleading to be given to an owner, saddler or saddle fitter without first assessing the

saddle on the horse • Thermography cannot be used in the assessment of brand new saddles as the body doesn't respond as it would if the horse had been ridden in the saddle for three months. There was no way to detect what effects the saddle may have on the horse's back after an extended period of work • The use of pads blocks the metabolic heat reflected onto the surface of the saddle, so if thermography was used to assess the fit of a saddle with pads attached results would be misleading. The same statement applies if pads are



Thermography

Buyers' Guide



The thermographic images of the saddle showed a slight imbalance to the left panel. The image of the saddle panels are visually misleading - if you based your findings on these results alone, they'd suggest that the saddle has a good contact area despite being much too narrow for him.



The Pliance results showed very high pressures either side of his withers indicating the saddle is far too narrow for him.



Thermography proved to be good at assessing exercise-induced conditions by screening horses pre and post lungeing and after ridden work

removed for testing when the saddle has been specifically fitted with pads

• The thermographic results provided by the qualified veterinary thermologist correlated well with the veterinary, physiotherapy and gait analysis findings



On the thermography there was no evidence to suggest the saddle was tight each side of Buster's withers.



Buster was an interesting case - although the results from the thermography were inaccurate in the assessment of the saddle fit, they did detect a number of other dysfunctions specific to his right hindleg which were worthy of further investigation. This also correlated with other professional reports from the vet and physio on the day.

What do the results tell us?

Results indicate that thermography isn't reliable for the assessment of saddle fit at this stage and, in most cases, standalone saddle testing with thermography provides misleading results. If during a full body scan, it detects a condition that may possibly be saddle related. the best course of action would be to immediately involve a saddle fitter to assess the saddle's fit.

Trusted help and advice

Wherever you see this logo you can be confident you'll receive a professional and knowledgeable service, whether buying a new saddle or needing one altered. Members of the SMS are the best in the industry, and a SMS retailer will stock at least three different English-manufactured saddles. The SMS has a test programme to provide scientific data to help prove or disprove common theories relating to saddle fitting, design and use. Search for your nearest SMS fitter and retailer at www.mastersaddlers.co.uk