

## Saddle Fitting 101

By Jochen Schleese, CMS, CSFT, CSE

### A master saddler shares advice on the practical science of saddle fitting.

Your horse's conformation will change many times over the course of his life. Think of a circle surrounding him (or her), one divided into equal pieces with a minimum of eight at any given time. Only one of these pieces represents the rider; other components include the trainer, the veterinarian, other body workers, nutrition, the blacksmith, the horse's age and condition and the tack—including bits, bridles, girths, saddles and pads.

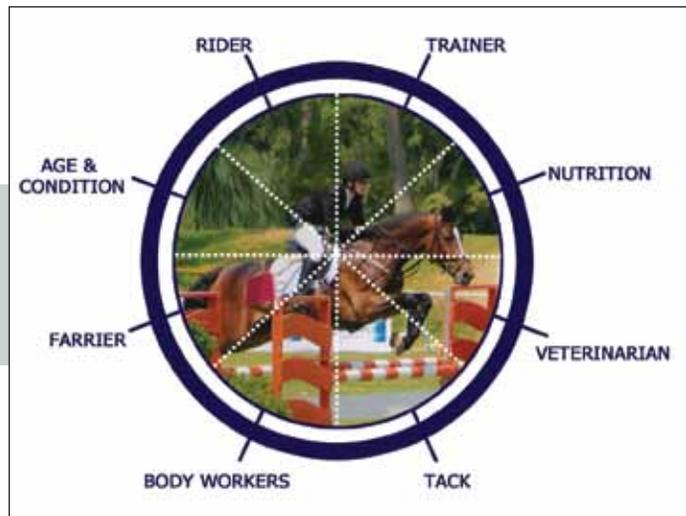
The saddle and the work of the saddle fitter must never be considered in isolation, since all of the pieces of this circle of influence are interdependent. If the training methods or the horse's nutrition are altered, the horse's conformation will change. It follows logically that the saddle will no longer fit—and the reason is not because the saddle fitter did a bad job but because the shape of the horse's back has been altered.

Occasionally I hear riders say, "I have been using my saddle for a number of years. It fits me perfectly and fits every horse I use." I have to really bite my tongue on that one but usually just manage to smile and say, "Lucky you." Unfortunately, some people are just not open to facts that have been substantiated in recent years through MRIs, thermography and fibre optic cameras, and they simply do not realize the possible damage they are doing to themselves and their horses.

Saddle fitting is an attempt to prevent long term damage to the horse's back by alleviating pressure on the reflex points and distributing the rider's weight optimally. Keeping the horse sound and happy as well as the rider healthy should be the ultimate goal for everyone in the circle of influence. All need to work together cooperatively to achieve this. Any change in one of the pieces of the circle (positive or negative) will have a consequence on the others—with the simple result that the saddle may no longer be balanced properly or fit correctly.

#### Conformational Changes

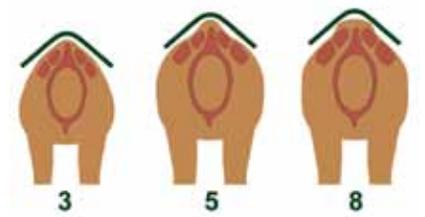
It is a given that over the course of a horse's life he will change his three-dimensional back shape many times. All things being equal, the shape of the horse's back and especially the



The Circle of Influence clearly shows the amount of external influences to the well-being of the horse.

length of the saddle support area (from the base of the wither to the last thoracic vertebra) will change most significantly at ages three, five and eight. This can cause frustration for the rider as it will definitely require a saddle fit adjustment to accommodate wider shoulders, higher withers and more muscling on the back.

Also, over time the shoulders will likely have muscled up and physically moved further upwards and backwards—which means that placing the saddle behind the shoulder (as usual) puts it further back by a couple of



Over the course of the horse's life the most radical conformational changes will take place at ages 3, 5, and 8. These are cross-sectional illustrations of wither and shoulder areas.

inches—and now it encroaches past the last thoracic vertebrae to press on the kidneys or ovaries. This is the area that we call the 'bucking reflex'—a common and undesirable result!

I suggest annual saddle maintenance check-ups and tune-ups as a minimum; this frequency should increase if there are extenuating circumstances or changes in that circle of influence, such as increased training or changed nutrition.

One of the problems with buying a custom saddle is the expectation of an inexperienced or uneducated rider that this saddle is going to fit 'as is' for the rest of the horse's life. This seems a bit silly, though, if you consider that a car—a hunk of steel that doesn't even work as an ongoing interface between two living beings—needs regular servicing and maintenance. Even a saddle which has been regularly maintained and serviced, which was purchased for a young horse a few years

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ago, may often have to be completely exchanged simply because the saddle support area has grown smaller as the horse has matured and the saddle is now simply too long for the horse's back!

In general, saddle fit should be checked minimally once a year, and more often if there are other things going on in your horse's life. Of course, you may not always have immediate access to your saddle fitter, and there are some temporary solutions available when you suspect saddle fit is an issue:

▶ *Stop riding your horse until the saddle can be checked and refitted.*

▶ *Use shims in your saddle pad (gel pads with the pockets to fit shims front and back on both sides as needed, a good temporary expedient to avoid hurting your horse).*

▶ *Lunge your horse to exercise him.*

▶ *Try a different saddle or bareback pad for a few days.*

It is never a good idea to ride your horse in a poorly fitting saddle for an extended period of time. Of all of the pieces of the circle, it is the saddle (as interface between horse and rider) that has the potential to inflict the most physiological damage.

### Guidelines to Check the Fit

▶ **Balance:** The center of the saddle (seat area when viewed from the side) should be parallel to the ground while on the horse's back.

▶ **Wither Clearance:** Clearance at the withers should be two to three fingers for normal withers all around the sides as well, not just at the top.

▶ **Gullet Channel Width:** The gullet should be wide enough not to interfere with the spinal processes or musculature of the horse's back (three to five fingers evenly from front to back).

▶ **Full Panel Contact:** The panel should touch the horse's back evenly all the way from front to back; some panels may be designed to sit slightly off the back at the cantle area to allow the back to come up during engagement.

▶ **Billet Alignment:** The billets should hang perpendicular to the ground so that the girth is positioned properly and not angled either forwards or backwards. The girth will always find its position at the narrowest point of the rib cage behind the elbow.

▶ **Saddle Length:** The shoulder and loin areas should not carry any weight of the saddle and rider. Rider weight should be on the saddle support area only (from base of the withers to the 18th thoracic vertebra).

▶ **Saddle Straightness:** The saddle should not fall off to one side when viewed from back or front. The tree points should be behind both scapulae (shoulder blades).

▶ **Saddle Tree Angle:** The panel tree points should be parallel to the shoulder angle to position saddle

properly and to allow the shoulder to 'slide through' during movement.

▶ **Saddle Tree Width:** The tree width should be wide enough for saddle to fit during the dynamic movement of the horse and accommodate the larger shoulder to prevent the saddle sliding to one side.

### A Good Saddle Fitting Session

Regardless of whether you are working with a fitter, a saddle ergonomist or a saddle salesperson, the following guidelines will allow you to ask informed questions of your equine professional.

The first question is about what you want to accomplish in your appointment. Are you experiencing particular saddle fitting issues with your current saddle that you'd like resolved? Are you looking to purchase a new saddle? Do you have a saddle you'd like refitted?

Measurements of you and your horse should be taken to establish a baseline and to evaluate how well your present saddle fits you both. This will also help decide which saddle would work best for your particular configuration.

These measurements will also help assess future changes in the horse's conformational development. There are various tools available to take these measurements but most saddle fitters rely mainly on a flexible wire curve to determine withers shape and size.

If your saddle is fully adjustable (which means being able to change the gullet plate in both angle and width as well as panel flocking), precise adjustments to the fit of the saddle as your horse matures and progresses in his training can be made. Otherwise, only the flocking can be rearranged and perhaps the angle of the tree points altered—which may mean a new saddle is required.

The horse's basic anatomy should be evaluated to determine the length of the saddle support area, the width of the spine, if one shoulder is larger than another and the size/shape of the withers. The current saddle should be looked at to determine the integrity of the tree and the condition of the billets, the stitches and the leather. The girth must be appropriate in length and construction, and the saddle pad should be considered as well.

Is the saddle's seat size appropriate, too large or too small? Is the flap the correct length and angle? How is the depth and balance of the seat? Are there any particular issues you've been experiencing with your saddle? Static fit



Saddle fitter Laura Whitteron uses the Sprenger Gauge to determine the width and angulation of the withers.

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## “After a saddle is newly adjusted, in accordance to the second theory, the increased range of motion may cause temporary soreness.”

of the saddle to the horse should always be evaluated. Is the length of the saddle appropriate or too long for this horse? Do the billets fall in the horse's girth area, or are they too far back or forward? Is the width of the gullet consonant with the width of the horse's spine? Is the length of the vertical panel correct or too long? Is the horizontal panel hollow or bridging?

Following this, you should ride your horse without a saddle pad at the walk, rising trot, canter and sitting trot on a 20 meter circle in both directions. This is the dynamic fit portion of the saddle fitting evaluation: the dust pattern gained from it will allow an exact evaluation of what the saddle does when the horse is in motion. Does it move forward onto the horse's shoulders? Does it fall off to one side? Does it stay level and centered on your horse's back? The dust pattern ride gives additional information to help determine what adjustments to make to the fit of the saddle.

### Conflicting Theories on the Fit

Equestrians should all be aware that there are two completely divergent theories on saddle fitting.

Many saddle manufacturers and their trained saddle fitters maintain, according to the first theory, that a saddle should have a narrow channel, and therefore sit on the spinal processes and ligaments. The tree is long and flat (resting on the shoulder and lumbar area) and sits with minimal weight bearing surface on the musculature. In this scenario, the saddle barely moves (other than perhaps to twist during motion as it is 'kicked back' by the bigger shoulder) because it is sitting on the spine.

This saddle rarely needs to be adjusted because bone structure and ligaments do not adapt and change their conformation through training like muscles do—and the muscles really won't change much because the horse simply is not able to use his muscles properly with a saddle that fits like this. Often people will say “my saddle always fits” or “my saddle fits any horse.” They are partially correct, because the one advantage to this saddle fit is that the horse doesn't really change shape and so the saddle doesn't have to be modified.

This theory's disadvantage is the spine and ligaments will not tolerate prolonged compression and the horse's back movement is restricted. To protect the shoulder, lumbar and spinal areas, the horse will get tighter and tighter in his back (especially in the lumbar area), which leads to cramping in the gluteus maximus muscle. The horse will then develop a dip in front of its SI (sacroiliac) joint and the glutes will seize up. Between the SI joint and the tail, the gluteus will

become atrophied (as in the photo at right). The front end of the horse will then push down the base of his neck and will 'break' over the third cervical vertebra (C3) in order to get on the bit. At this point it will become difficult for the rider to get the horse supple through the poll and have his highest point at the poll and not at C3.

The second theory is that the saddle stays off the spine, lumbar vertebrae and shoulders while maximizing the surface area the saddle sits on. The saddle support area is on the weight-bearing longissimus dorsi (long back muscle). The advantage to having the saddle on this “saddle support muscle” is to stay away from the reflex points that create negative behaviour or negative conformation and health issues. Staying off the spine, lumbar area and shoulder keeps the back muscles loose and supple. Your horse can then articulate through the SI joint and use his haunches better by stretching his gluteus maximus and hamstring. In the first theory, where the saddle sits on the ligaments, involuntary contractions (i.e. cramping) impede correct coordination of muscle contractions and thus full range of motion is not possible. In contrast, the second theory allows for both stretching and contraction of the muscle, allowing full range of motion.

The most efficient way to train is to maximize both flexion (contraction) and extension (stretching) and in order to achieve this, full range of motion is required. By reducing the pressure on the shoulder, your horse will be able to lift the base of his neck and become supple through the poll. By allowing the horse to fully engage his muscles and lift his rib cage, he will become progressively more uphill as his training progresses. As a result of these continuous positive changes in his conformation, the balance of the saddle will need to be readdressed many times throughout his career.

In the first theory, because the saddle is mainly sitting on the spine, with limited contact on the back muscle, the horse



Joanna Robson

Swelling on the spine: the damage shown on this horse's back has been compounded over the years of use with a poorly fitting saddle, showing hunter's bump, subluxations and vertebral inflammation.



Steffi Neumann

The white cross-hatched area shows the saddle support area of this horse's back; you definitely want to stay off the red triangle at the front with any part of the saddle.



**This rider shows the harmony and beauty of classical riding in a well-fitting saddle.**

will continue working but it will take a toll on his body. He will continue developing incorrect muscles and deformities that will become more visible over time. Eventually, the atrophy in the back muscles and compression of the spine will lead to permanent damage.

After a saddle is newly adjusted, in accordance to the second theory, the increased range of motion may cause

temporary soreness. This is due to greater lactic acid build up (just as we human athletes experience after using muscles during a new workout) and is nature's way of recovering muscle fiber. The result is greater muscle formation and increased circulation.

If your horse has been ridden in ill-fitting saddles in the past that have caused some back pain, don't be discouraged if your horse shows signs of muscle soreness after switching to a saddle fitted based on the second theory. This is actually good muscle soreness.

During acute soreness, keeping pressure off the muscle would appear to be logical. The saddle needs to be supported somewhere, however. You can help your horse during this time by having the back of the saddle a bit looser (by loosening the V webbing back clip for instance). This may make the saddle move more in the back (up and down, not onto the spine!), and onlookers may misinterpret this as bouncing or an ill-fitting saddle. However, you will know that this is part of the process to help your horse. It will help him heal, get stronger and develop correctly.

Without a doubt I believe that the second theory is the best—really the only—choice for a happy, healthy and successful horse. I hope you will choose this path for your horse, allowing him to develop to his fullest potential. There could be occasional frustrations along the way, but the results will be worth it! **WT**