

# Girthing



Hastilow Competition  
Saddles USA

1684 Hendershot Rd,  
Warfordsburg, PA 17267

717-294-6757

717-294-6547

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## All English Tack

Discussion of girthing.

# Girthing and its Effects.

## Annette Gavin, Dec 08.

Girths are probably one of the most undervalued items in the tack room today, we see them as an appendage that holds the saddle in place and really think little else about them except perhaps to ensure they are soft so they don't rub. But girthing is a science in and of its self because where you place the girth, how high it is, and the conformation of the horse in the girth area all combine to determine whether the saddle will stay secure or not.

The role of the girth is essential to good saddle fitting as a poor girth can cause a well fitting saddle to create endless problems, firstly with stability, if a girth is too long and buckles high on the billets on both sides the security of the saddle will be diminished, by allowing the saddle to roll from side to side with the lateral movement of the horse, whilst in Canter it will allow the saddle to ride forward into the shoulder blades, the rider also feels the billets and buckles beneath the leg and can be bruised easily. Too shorter girth will anchor the saddle around the horse and make it feel tight and rigid whilst not allowing the horse to expand his chest and breathe deeply, here again it can interfere with the leg aids and hurt the rider in the calf area.

The anatomy of the girth area is defined by a complicated collection of muscles (contractile ability) bones (rigidity) and fascia (elasticity), the horse depends on these to enable it to function both in the physical sense of movement but also to breathe, and as we develop the carrying capacity of the horse through its training and we expect more of him athletically, he needs this area to help him change his centre of mass and thus alter the balance point in response to the work. We call this the Kinetic chain and a great deal of energy is required to enable this chain to work correctly, any restriction in the wrong area will diminish both the comfort of the horse plus his athletic capacity and his volume of oxygen .

The chest area is compiled of the ribs, the bones of the rigid structure and the sternum, the floor of the chest held in place by the first eight pairs of ribs. The sternum is made of several bones held together by cartilage and is articulated to the ribs the same way, this allows for flexibility within the structure and offers an attachment for muscle fibres. This area is innervated through the brachial plexus and the branching nerves carrying the motor and sensory nervous impulses to the trunk and forelimb, so any constriction in the area or discomfort effects both the movement and feeling. The girth tightens across the caudal deep pectoral muscles below the sternum, these muscles are involved in the movement of the legs and thus a poor girth will diminish the action and impulsion as the horse pushes up through the forehand to connect through the Kinetic Chain. Research done by Dr David Marlin and fellows shows also that the tension of the girth compressing the chest muscles limits the function of the inspirational muscles and so can produce premature tiring of the horse when galloped or worked under pressure. The muscles most effected were M. serratus ventralis thoracis and M. pectoralis ascendens.

Movement:

As a horse moves the area of the ribs between T5 and T13 carry the most movement in lateral, axial rotation and flexion. This is the area under the saddle, so fitting both saddle and girth correctly is paramount. Gallop research has shown that there can be as much as 30cm difference in the length of the rib cage from T4 to T16 in each stride when the ribcage goes from concave to convex as the stride stretches from loading to release (Ch 2 p36 Biomechanical Riding and Dressage, A riders Atlas, by Nancy Nicholson Ph D.) this amount of stretch forward means a high level of contraction and release of the body and therefore a difference in the truck thickness in the contracted phase as opposed to the release phase. This is a substantial amount of movement so both saddle and girth need to fit correctly. As we have learnt more about this subject through the use of the Pliance system, we can surmise that the horse feels pressure in the girth area much more than we first thought. Research shows that although the type of girth and the tightness of it do not really effect the pounds per square inch felt beneath the saddle, under the girth it's self there is a restriction in the muscle of the area

and consequential tension is felt if the girth is too tight or if it is too mobile. Girthing needs to be stable and tight enough to hold firm but not too tight to limit circulation and innervation.

In today's market there are so many girths to choose from that an understanding of the function of the horse and his girth is important, as just because it is sold doesn't mean it is a workable product. Informed choice is the answer.

Firstly, the cleanliness of a girth is really important, girths of all types harbor fungus, and skin problems arise from dirt and sweat accumulating on the undersurface. Leather is the most horse friendly material as it breathes but does not absorb, however it does need regular cleaning to remove sweat as this removes the fat content from the leather leaving it brittle and more likely to rot, rub the horse or cause a gall, oil the girth and keep it supple to prevent deterioration and it will last for a long *time*. *Plastic and imitation leather girths are the worst as these cause sweating and don't breathe, leaving the skin irritated and sore, they also crack easily, these cracks are then the harbinger of bacteria and fungus, and also are a danger to the rider because of the high likelihood of failure. Any synthetic girth is more prone to cause chafing and many don't breathe, especially the neoprene ones ( this material was designed for wet suits, to hold an insulating layer of water between the divers skin and the suit raising the temperature for the diver to keep them warm at depths, thus when it is used as a material for the horse it has the same properties which are not desirable in a girth) all must be kept very clean and dirt free, there are some really good synthetic girths out now that breathe and are easy to clean and these are also economical to buy so they offer really good value for money, however they too need to be kept clean. Cotton girths, either the Cottage craft design or the string ones are breathable and cool, watch that in the string variety the horses skin, especially if they have a fleshy girth area, is not squeezed between the strings when it is tightened and these girths are prone to a rolling up of the cross supporting web which causes sores and rubs on the skin, they too need to be constantly washed to stop both fungus, which can live easily in cotton and dirt build-up.*

## Design of the girth.

Girths are designed to secure different saddles types in different ways; they are also designed to do this job in an optimum place, so fitting a girth too high on the barrel of a horse or too low will impede its effectiveness. Make sure you have the correct size for the animal you are fitting. A girth should fit at the widest part of the horse if it is a long style on a Jumping or All Purpose saddle, that means it should be tight when it is pulled up to the centre of the barrel each side. This gives stability to the saddle and allows the horse the correct space to breathe whilst giving the rider the most secure hold from the saddle, a girth pulling up higher than this will have the propensity to roll from side to side when the horse moves, even a small sideways motion will cause callusing either side of the wither and perhaps deep bruising if continuous. It also, on a wider horse, will allow the saddle to actually move position on the back, a dangerous problem for horse and rider. If the girth is too small and draws up low on the flap, this is the lesser of the two evils, it will not hold the saddle firmly on the sides of the horse so the saddle will be pulled down with greater tension and this can interfere with the shoulder movement and the muscular expansion through the chest.

A short girth, I will not call them dressage girths as they are now used on Monoflap saddles for jumping as well as dressage saddles and some endurance saddles have them to avoid a girth under the riders leg over a long period of time in the saddle, is designed to remove the buckle thickness from beneath the leg of the rider so giving a better feel under the flap and a more defined aid. They fit at the lower area behind the elbow girthing up when tight at the elbow point or just above and rely on a long billet strap on the saddle to secure the girth. The disadvantage for the horse jumping is that this system pulls the saddle down on the back with the tension point low so the girth straps take a lot of stress, and the shoulder is more restricted than in the conventional model, the propensity of these girths to ride more forward behind the shoulder and elbow also means that the horse in flight over a fence has the girth right at the back of the leg action and

if the girth is stiff it can interfere with the shoulder and make it uncomfortable to draw the leg back through the full range of movement. With dressage and endurance saddles there is less dynamic movement of the saddle as the horse is not propelling its body through the air over a fence, however the same issues apply, a short girth can move into a forward girth groove easier than a long one and thus pull the long less stable girth strapping with it, this rides the girth into the front leg and can make the ribs sore along with the chest muscles. Another complication of this is that as it moves the footprint of the girth and its pressure points change from being even through the design to having all the pressure concentrated on the back area of the girth with a gap under the front area, and the leading edge rubs the front leg in movement. A well designed short girth will stay stable, have an even pressure through the girthing contact, be soft yet not stretchy, keeping the saddle stable in movement with the girth straps running straight down to the girth, not pulling forward.

Elastic or not:

Elastic in girths has been argued to allow the horse expansion of the chest muscles while breathing and when exerting himself, but the actual effect is the opposite, in general elastic is not a long lived material and so often is worn out within a year and cheaper qualities of elastic, either because they are too narrow or they have not got the strength, are too stretchy giving the rider the feel of insecurity in the saddle, this encourages the rider to tighten the girth more and restrict the chest expansion as the elastic pulls back to its original shape or near it with each stretch. Elastic does make it easier for the human to girth the horse, but in general does not make it more comfortable for the horse to wear, (remember that too tight waist on your trousers). Wider bands are more comfortable, but too wide is also bad and elastic girths are very easily over tightened by the rider limiting the chest expansion and the recovery time. No elastic in a girth means that the girth can't be overtightened, the stability is better and the roll felt on the horse whose conformation is rounder with a higher flatter exiting rib is eliminated. If you do have to have some elastic in your girth, try to

have it in the middle or lower on the horses torso behind the leg area, do not have it on both ends, on the one sided elastic girths the elastic side should always be attached on the off or right side of the horse so the pull of the adjustment of the girth brings the whole girth tighter around the horse not just lengthens the elastic as you adjust.

Dressage girths are best if they have a central small elastic portion that will only allow a limited give, please do not use elastic on Monoflap saddles as they have the added instability of stretch on an already inherently unstable girthing position.

Styles of girths;

Long Girths, ..... Atherstone, a shaped solid girth of soft glove leather wrapped over a sponge or close cell foam insert and secured on the outside with a stiffening leather to hold the girth and give it strength. These may have elastic inserts on one side, both or not at all. The shape of the Atherstone is wider at the top and under the belly to spread the pressure of the girth when it tightens and narrower at the area behind the elbows to accommodate the leg movement and free the shoulder.

The Balding is a more old fashioned design not seen very often now, but a very useful girth as it has a braided look going very small at the elbow area then widening again at both the belly and the buckle ends, this girth equalizes the pull because it crosses over at the elbow on both sides and due to the small area of contact behind the elbow it will not pinch skin or roll it in front of the girth if the horse is fleshy or has lots of skin in that area, not seen much now as it is hard to mass produce and is not conducive to being made out of synthetic materials, so you will only find it made by handmade saddlers out of leather, made out of any other fabric this design would not have enough tensile strength to be safe. This girth does not have elastic inserts.

The three fold girth is another design, made of one piece of soft but strong leather folded into three layers with a soft strong inner layer of nylon or cotton to both negate the stretch of leather and so it can be soaked in oil or conditioner to feed the girth and keep it supple whilst it is in use. The pro's to this design are that it molds to the shape of the individual horses girth area and folds itself to allow the correct movement of the leg and shoulder for each horse, this design also usually does not pinch, however it needs to be kept clean after each ride and kept very supple, it also really has to be only used on one horse, so this really has been superseded by the more modern synthetic materials which all do better in an Atherstone shape.

The York girth is a cross between the Atherstone and the Balding with the cross over slightly higher than a Balding and made of elastic, this girth has advantages of giving an even stretch on both sides of the girth so pressure is better distributed and the cross equalizes pressure when the girth is tightened, however the girth can seem unstable at times as there is more flexibility and therefore movement in the system. The elastic should be designed with a back wide piece of single elastic with a crossover of elastic on top to provide the counter pull and the area of attachment from elastic to leather should be soft and not a hard edge. The disadvantage to this design is that if you have one of those fleshy girth area animals this higher cross will not stop the rolling and rubbing at the girth that the Balding does.

Shaped girths which have a forward belly plate and bend back behind the shoulders were developed to help horses with a forward girth groove so that the girth can sit in the groove but the girth strapping on the saddle will remain straight down so producing the correct alignment of girth, saddle and horse conformation, this design in the long girth is without elastic and can be quite successful but it is a very stiff design and can rub if not cared for well, it also has the tendency to cause pressure lines over the girth area if it is not fitted correctly or the shape of the horse is not conducive to the use of this shape of girth, it can't be designed in a synthetic as it needs to be quite solid to keep its shape. Disadvantages to this design at present seem to be that pull is always in a straight line, therefore when a girth shape is diverted the pull or force is concentrated

over the straight line area where the girth contacts the horse, while the rest of the girth is away from the horse with no footprint.

Short girths; these are usually called Lonsdale, and are made in a padded fashion of soft leather over sponge or close cell foam, the designs are straight in the traditional Lonsdale shape or fitted with a slight narrowing behind the shoulder. Three fold also are available if you look, in the short version and these do work well as they should have the three folds with a piece of web inside to strengthen and also to soak with oil so these girths do not get hard, make sure the fold is forward and not the cut edge.

The shaped or curved forward girth is another type, this style is supposed to help with a forward girth area and keeping the strapping straight on the saddle, however the disadvantages to this are the girth in order to keep its shape has to be very sturdy and so not very flexible in a sensitive area, the girth is often pulled into the shoulder and elbow with the leading edge catching the movement on the back stance of the stride, the plate that sits forward under the horse can cause an uneven pressure and lift at the front in movement, so restricting the shoulder and stopping the hindend from coming through, make sure that this girth is fitted correctly and is the correct type for your horses conformation before using it as it can do more harm than good. All pull is in a straight line so these girths have the greatest tension firstly on the front of the girth, then as the girth curves forward under the belly the tension is maintained in a straight line so it transfers to the back of the plate. This gives the horse a narrow area with high tension.

Central Sternum plate girths are those that have a larger central plate under the belly, this is designed to hold the girth still and spread the pressure over a larger area, the design must have minimal elastic though as the idea of keeping the girth immobile is negated by a large elastic portion and the belly plate needs to be a soft but grippy material with pressure reducing qualities. The situation of all elastic areas on girths defines whether they are successful or not so a good design will incorporate the least elastic, as elastic is essentially for the human not the horse.

Strapping systems on saddles; this is an area that is changing as the design of the saddles girthing system is altering, now a large selection of saddles have a point and balance strap system of girthing and many saddlers are giving the fitter a choice of changing the girthing arrangement to accommodate the horse that is being fitted, this is of great help in securing a good fit for the horse but it is totally negated if the rider then fits a girth that is going to distort the girth system and pull the saddle to the wrong place on the horse. Girths with a long design must have a split end at each side to accommodate a point strap, and if a self centering balance strap is also added then the split end has to be longer so the girth ends can part to allow the correct girth effect.

With the short girth, the top of the girth where the long billet attaches must have an angled keeper position to maintain the girthing arrangement correctly, if a point and balance strap system is then brought back to a conventional straight topped girth you may as well not have bothered to have a balance system at all as it is negated.

The discussion of Roller buckles or not on a girth is a personal choice, the advantage to a roller is they are easier to move under pressure, but the roller itself can often bend and can cut or damage the strap, non rollers are harder to tighten but slip less and do not damage straps .

Self centering girth ends, sometimes known as Humane girths, are another topic of discussion, these ends are supposed to allow a centering of pressure when pulled up, however the technology that allows this centering also allows a considerable movement when the horse is in motion so these give an unstable anchor point to the saddle and they can be tightened unevenly thus allowing the saddle to shift and move whilst the rider is working the horse, this will cause back discomfort and pivot points the same way a too wide saddle can.

Elastic on a girth end should always be placed on the opposite side from the one most convenient for the rider to tighten, as the rider will then pull the whole girth around the body of the horse and give an even pressure and footprint, if the elastic is on the riders tightening side the girth will only be tightened by stretching the elastic and so pinch the horse. Girths with elastic both sides are more even in

their expansion but are generally too giving especially if the quality of the elastic is not top of the line, all elastic inserts in girths should be as small as possible.

Point and balance straps on a saddle help when the saddle rides into the shoulder or up on to the neck of the horse, the habit of manufacturers only providing these options on saddles even if the horse does not need them is proving to be restricting to the shoulder movement by pulling the saddle front down on the trapezius muscles of many horses, this observation is only anecdotal at present, with conformation through video's of several horses with and then without the point strap girthed up.

To conclude then girthing can actually do as much to make a saddle fit poorly as the saddle itself, and an understanding by both the rider and the Qualified Saddle Fitter of the structures of the chest area, the mechanics of the chest and breathing under stress and the conformation is really essential to attaining correct fit of a saddle and girth and to maintain stability.