Classical Horse Training

Combining art with science to achieve balance and harmony

SHOULDER-IN

'The essential exercise for shoulder freedom'

MANUAL

Foreword

This document is the result of many years of research and personal experience worldwide. I sincerely hope that it will be useful to your personal learning experience and contribute to your personal training and development. This document goes together with the video assigned to you in the Online Support Program. Make sure to first watch the video and use the manual as an additional learning tool. I wish you a lot of fun and lightbulb moments diving into these materials.

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INTRODUCTION

The shoulder-in belongs to the family of lateral movements. Lateral movements make it possible to target specific limbs, muscles and joints. This allows for improving overall balance and straightness. Furthermore, it enhances shoulder freedom as well as gait regularity and quality in preparation for true collection.

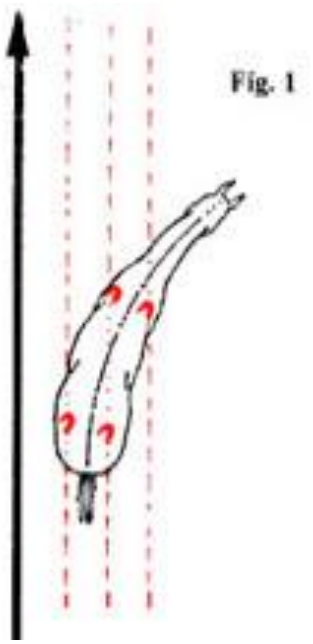


Fig. 1

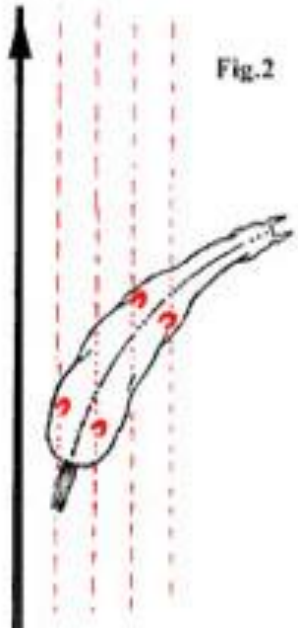


Fig.2

Lateral movements are also very suited for rehabilitation purposes. Through proper execution, you can release the lumbosacral, hip, stifle and hock joints as well as spinal dysfunctions and a tight abdominal wall.

As with all lateral movements the essence is about correct lateral bending and coupled with the axial rotation. In the ideal shoulder-in the horse moves in a sideways, forward direction As the name suggests, the shoulders are turned inwards and move on the inner track while the hind legs are ought to remain on the outside track. The inside hind limb crosses over the outside hind limb while the latter has to remain the forward. The shoulder-in can be performed on either three of four tracks. On three tracks the inside front limb is on the first track, the inside hind limb and outside front limb are on the second track and the outside hind limb is on the third track. When performed on four tracks, all limbs are on their own track.

Thus, the shoulder-in is the first lateral movement which, if executed correctly, induces correct lateral bending and rotation, lowers the inside haunch, while freeing up the shoulders. Furthermore, it opens up a gate way for true collection later on.

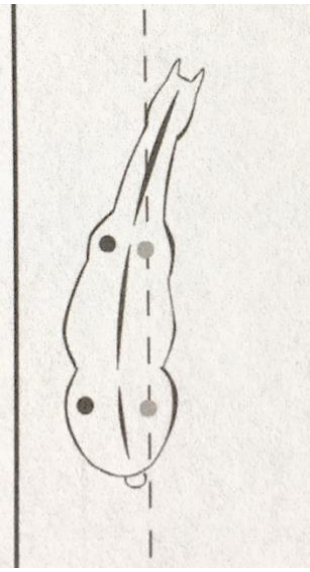
It is also one of the most useful exercises that can be used for rehabilitation purposes. For example, it can be used to ask the ribcage to flex after treatment for symptoms associated with either birth trauma, such as girth pain, or spinal disfunction. It is also a perfect exercise to help straighten any hip joint rotation and strengthening the supporting musculature around it.

Furthermore, the shoulder-in prepares the horse for other exercises. In a sense, all other lateral movements are linked to the shoulder-in. **"***Travers and renvers, precise riding through corners, turns of the forehand around the hindquarters, are inconceivable without shoulder-in, namely without the correct flexion and shoulder position required by the true shoulder-in. All mentioned movements can evolve only of a well-established shoulder-in (Steinbrecht).''* The half pass, can be added to this list with Nuno Oliveira stating that *''Only when the horse knows this lesson [the shoulder-in] well should be the teaching of the half pass started.''*

The exercise can be performed in all gaits, both on the straight as well as on the circle. However, due to the three-beat footfall of the canter, the execution of the exercise in this gait is limited. In the canter, the exercise is merely limited to a shoulder-fore which is perfect for straightening purposes in this gait.

It takes a lot of time to develop a proper shoulder-in due to the coordination needed to perform this exercise and as it serves as an absolute basic for all lateral movements. As a general rule, it is the hardest exercise to perform correctly and the easiest to perform poorly.

STRAIGHTNESS



The shoulder-in, but mostly the shoulder-fore is an absolute perfect exercise to counter act the natural asymmetries of the horse. It was Steinbrecht who discovered that most horses have more narrow shoulders than hips which results in asymmetrical movement . It was therefore that the developed the shoulder-fore in [see picture on the left] which the horse's inside shoulder is place in front of its inside hip which is a very effective exercise to straighten a crooked horse.

Steinbrecht also refers to this as ''setting straight'' which ''*is not the unflexed carriage of the horse but the correct position of the hindquarters relative to the forehand and vice versa.*''

Unlike the shoulder-in, the shoulder-fore can also be performed in the canter. Due to the three beat footfall of the canter it is impossible for the horse to physically cross the inside hind limb over the outer one. However, since most horses canter with their bum inwards [haunches in tendency] due to their natural asymmetry the shoulder-fore is probably the highest movement possible to straighten this gait.

From there, the shoulder-in is basically nothing more than a greater shoulder-fore and therefore the shoulder-in is also a perfect remedy to straighten crooked horses. For example, a horse with a week hind will be suppled and straightened through a left shoulder in. Throughout this manual, this essence will be explained more in depth.

left

Left: asymmetry in the canter with inside hind limb trailing out.

Right: correction through shoulder fore in the canter.

VARIATION

As mentioned before the shoulder-in is linked to most other lateral exercises. As the other movements will be described in separate manuals and I already mentioned the shoulder-fore in the straightness section, I will mainly focus on the counter shoulder-in and renvers in this section which will be referred to as counter movements.

Counter movements are generally understood to mean those movements on curved lines in which the horse is asked to turn in a direction opposite to its bend. In this position, a horse bent to the right turns to the left and vice versa. Counter movements should not be seen as separate exercise, but rather as a continuation of the corresponding simple – inside bend – exercise with a change in the direction of tracks. Therefore, counter movements require exactly the same aids from the trainer as the simple movements, only under consideration of the changed direction of tracks.

Counter movements serve to strengthen and improve the simple movements and to securely prepare for the next one. When used correctly, counter movements are of extraordinary effectiveness in strengthening the horse, but are also generally more difficult to perform.

The increased difficulty of counter movements lie in the facts that it requires more collection and shortening of pace, especially in the turns: *''The counter movement always requires greater collection and shortening of pace from the horse and therefore is more difficult than the simple movement and contributes significantly to perfection and strengthening. Effects are most visible in the turns. (Steinbrecht).''*

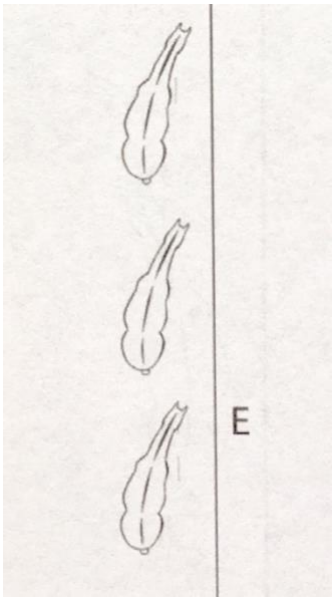
Turning in a counter movement is much more difficult because the weight is unable to *''follow the natural inclination of the center of gravity but must move in the opposite direction.''* However, *''The shortening of the forward movement of the hind legs, however, must not reduce their lively, elastically springing activity but must increase it so that they will be able support the forehand more strongly (Steinbrecht).''*

Because they are more difficult to perform, insufficient training skills will soon reveal in these exercises. Counter movements should thus always be built up gradually and with precision.

In the counter movements, the outside rein is of great importance as it becomes the guiding rein through the turn the turn as it must direct the forehand to turn in the direction opposite to the bend. Increased action of the outside rein should prevent the outside front limb from carrying too much weight. Furthermore, it must also restrain the [forward movement] of the

outside hind limb to the extent that the inside hind limb is able to follow sufficiently. The outside hind leg can be worked more successfully in the counter-position because it has the inside line, the inside leg can more reliably bend the rib cage and thus inside hind leg, which moreover, is being held in by the wall: ‘’*For that reason, skilled riders will be successful more quickly with horses which try to resist flexing by falling out with the croup or pushing against the rider’s inside leg and spur if they use the counter-bend as a means for obtaining the simple bend (Steinbrecht).’’*

A final general comment should be made on a general rule to check for the correctness of any counter movement*: ‘’Before I close this section of such important movements [the counter movements] I want to point out the rule which is applicable for checking the correctness of all counter movements, that the horse must be easier to turn from them toward the inner, bent side than toward the outside. For example, from the renvers to the right, the horse should be more willing to perform a volte of half-volte to the right than to the left (Steinbrecht). ‘’*

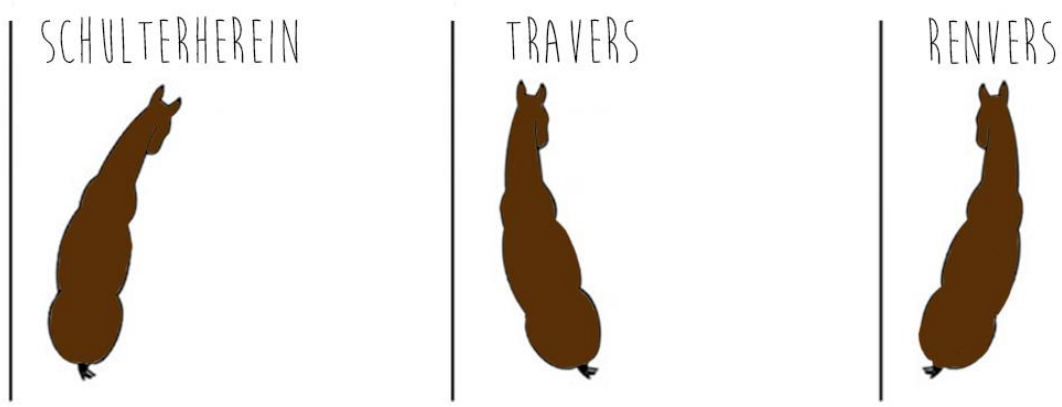


So now that you have a little bit more understanding of the counter movements in general, let’s have a look at the first variation of the shoulder-in, namely the **counter shoulder-in.** With respect to the bending and hoof placement, and consequently also with respect to the aids, they are one and the same movement and differ only in that the counter shoulder-in is ridden opposite to the bend so that the forehand is placed against the wall, while the hindquarters are set into the arena and travel on the inside track. In a proper counter shoulder-in, the outside hip thus constitutes the outer limit of the track. So it is continuation of the normal or ‘simple’ shoulder-in only under changed and more difficult circumstances.

A particular advantage of the work in the counter shoulder in is that in all turns the horse must always turn about the hindquarters. Furthermore, the wall is a support for the rider *‘’if the horse presses against his legs, a support that is absent in the simple shoulder-in since the sideways driving leg is on the inside of the tracks (Steinbrecht).’’*

The counter shoulder-in is related to the travers in such that the hindquarters are directed onto the inside track line in both exercises. Therefore, the counter shoulder-in provides the most natural preliminary exercise and transition movement for the travers since it already requires the same greater weight on the hindquarters as does the travers. For example you can alternate between right counter shoulder-in to left travers by changing the bend. The more perfectly the counter shoulder-in has been developed, the more secure is the basis for the subsequent travers and also renvers.

The Renvers or counter-travers is a variation of the shoulder-in as such that when the horse moves in the shoulder-in, the renvers is simply achieved through a change of bend. So for example, when travelling in a left shoulder in, the renvers is achieved through changing the bend to the right without changing the rein. In a correct convers, the inside hip constitutes the outer limit of track[1].



The Renvers was loved and treasured by the old masters very much who often used it to demonstrate the power and suppleness of their horses, particularly in the canter, the canter in place, and in the courbettes. In times where man still fought man on horseback, this movement had great practical significance because it enable the rider to skillfully circle his foe eye to eye.

Because of its relationship to the shoulder-in, they favored it over the travers along the wall which La Guérinière even referred to as an embarrassment: *''It is more reasonable, in my opinion, in order to avoid this embarrassment and the problem that could arise, to place his croup to the wall. This lesson is taken from the shoulder-in.''*

Picture adapted from Ecole de Cavalerie by Guérinière.

Steinbrecht beautifully described the renvers and its relationship to the shoulder-in by writing: *''The renvers is described perfectly by the term counter-travers and is related to the shoulder-in since in both the hindquarters are directed onto the outer track. They are opposites in that the bend of the renvers is taken in the direction in which the horse moves so that it counteracts the sideways movement of the croup. Just like the travers, this movement gives the rider great power to watch the horse's inside hind leg by way of the degree of bend – insofar as the bend is correct. Since the renvers requires the same high degree of collection as the travers, and the highly loaded hindquarters must step in larger strides than the*

[1] Counter shoulder in: outside hip constitutes outer limit of track; Renvers: inside hip constitutes outer limit of track.

forehand which is directed onto the inner line, it requires lively and strong work from the horse's hind legs (…) particularly in the turns in which the hindquarters must move in a larger arc around a more fixed forehand.''

So again, the renvers is much more difficult to perform than the shoulder-in or the travers: *''Since the posture of the croup to the wall, the horse [while moving sideways] must be almost straight in the shoulders and the haunches, the action of the shoulder is thus more circular and, consequently, the movement is more stressful and difficult for a horse than that of the shoulder-in (Guérinière.)''*

To perform a renvers correctly, the primary attention should be to guide the and restrain the forehand so that it is always kept at the same distance from the wall with a stronger action of the outside rein and simultaneously by slightly yielding with the inside rein so that an unnoticeable reduction of flexion gives the inside hind leg more freedom, and also by the corresponding lively urging of the hindquarters with the outside leg to make them cover more ground. *''Just as he adjusts the restraint or rearward escape of the horse in the counter shoulder-in by decisive forward driving toward the wall, in the renvers he must drive the horse forward into the arena in the direction of his sideways position (Steinbrecht).''*

A final note on these variations should be made to be careful to not over do them. In the words of La Guérinière: *''Even though the shoulder-in lesson and that of the croup to the wall, which must be inseparable, are excellent for giving a horse the suppleness, the nice bend and posture in which a horse must move in order to handle himself with grace and lightness, it is not necessary to abandon the trotting lesson on the straight line and on the circles.''*

So in **conclusion** it should be clear that the shoulder-in has many variations which are usually more difficult to perform. Therefore, all other movements rely on a well-established shoulder-in which serves as an absolute basic before continuing your training to a higher level. In this program, you will be challenged and advised to practice all variations. Remember: it is exactly between these transitions where the horse is straight. One that I practice most commonly is shoulder-in → renvers → counter shoulder-in → travers but many other combinations are possible.

HISTORY

Within the classical literature, the shoulder-in is probably the most described exercise. Its benefits have been described for centuries with some even referring to it as the 'Alpha and Omega' of dressage.

The shoulder-in was developed by the Duke of Newcastle, **William Cavendish (1593-1676),** in the 17th century and was originally performed on the circle. The description of execution states that the horse was asked to move with the *''head to the inside, the croup to the outside on a circle''.*

However, **Salomon de La Broue** argued placed some critical notes to this exercise by saying *''Not all horses' temperaments and dispositions are suited to this unusual constraint of always turning circles to supple them; and since their strength is not capable of making so many revolutions all in one breath, they are repelled and stiffen more instead of suppled.''*[2]

Cavendish responded to this reasoning by admitting that although the circle is his most preferred lesson, there are indeed some inconveniences when it comes towards suppling the shoulders. The placement of head to the inside, croup to the outside constrains the parts of the forehand as it moves on a smaller circle than the croup and thus *''initially places the horse on the forehand''.* He continues to explain: *''Anyone who tracks on a large circle works more, because he is make a greater path than someone who tracks on a smaller circle, having to make more movement and due to the necessity that the legs to be freer; the others [ones on the smaller circles] are more constrained and subjected on the smaller circles, because the forehand support the entire body, whereas those that make the bigger circle are suspended for a longer time. The shoulder cannot become supple if the inside hind leg, when working, is not in front of and close to the outside hind leg.''.*

French riding master **Francois Robinchon de La Guérinière (1688-1751)** took the discussion further by building on the arguments of the Duke of Newcastle which led him to invent the shoulder-in on the straight line. He wrote ''*This acknowledgement [referring to the Duke of Newcastle], which experience confirms, clearly proves that the circle is not the true means of perfectly suppling the shoulders, since something which is constrained and burdened by its own weight cannot become light; however, a great truth acknowledged by this famous others [again, referring to the Duke of Newcastle] is that the shoulder cannot be suppled if the inside hind leg, while moving, is not in front of, and close to the outside hind leg. It is this wise observation which made me seek and discover the lesson of the shoulder-in.''*

[2] This is the exact reason why de La Broue often preferred the square as explained in the manual of Lateral Bending.

It is thus that **La Guérinière** is accredited with the invention in of the shoulder-in as we know it today. He loved the exercise so much that he regarded it as the alpha and omega of dressage: *''The shoulder-in is the first and last lesson one must give to a horse to make a horse perfectly supple and free''.* In fact, he was so convinced of its superpower that he continues to say *''This [benefits] is so true that a horse which has been suppled following this principle, and then spoiled, either at the school or by some unskilled person, will become – if a true horseman puts him back in this lesson for a couple of days – as supple and comfortable as he was before.''* There we go. This is probably the first notion of what we recognize today as muscle memory. Super cool isn't it?

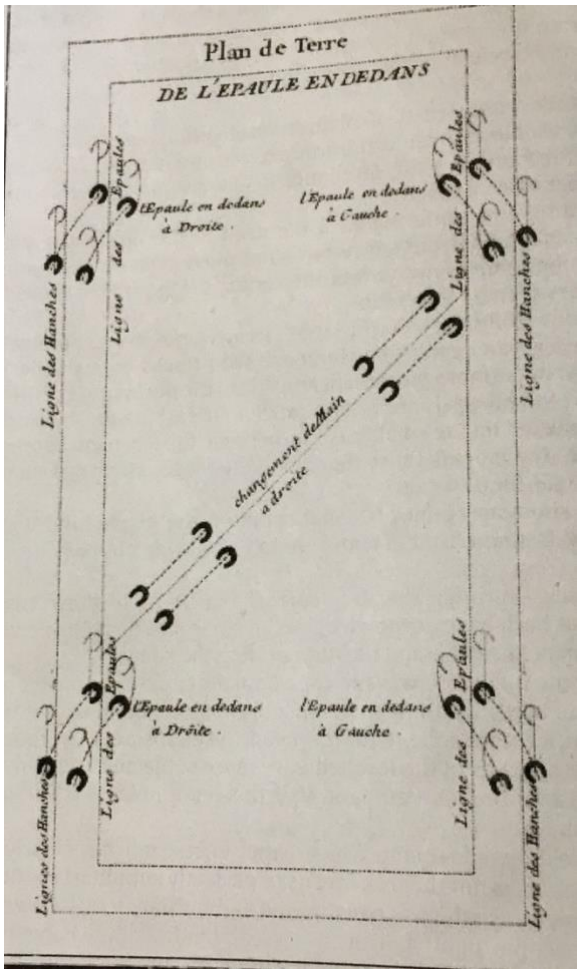
Picture adapted from Ecole de Cavalerie by Guérinière.

By now you might be curious to what benefits he derived from the practice of shoulder-in. Luckily for us, he wrote down three in detail:

1. *''Firstly, this lesson supples the shoulders, because the inside front leg, with each step that the horse takes in this posture, is stepping over and ''chevalant''[3] in front of and above the outside leg, and the inside hoof is being placed above the outside hoof and in line with it; thus the movement which the shoulder is obliged to make in this action inevitably has a strengthening effect on the muscles of the shoulder and for lifting the front leg.''*
2. *''The shoulder-in prepares the a horse for placing his weight on his haunches because, with each step that he takes in this posture, he brings the inside hind leg forward under the belly and places it over the outside hind leg, which he cannot do without bending the joints on his [inside] haunch.[4]''*
3. *''It prepares a horse for moving away from the spur [lower leg] because being obliged to step over and pass one leg over the other, the front as much as the hind, with each movement, he acquires through this the ease to ''chevaler'' well the fore-arms and legs in both directions, which he must do in order to move sideways with ease.''*

[3] The term ''chevaler'' refers to ''*the movement of the horse as he leaves the side wall on two tracks, when his outside legs cross those on the inside.*''

[4] *With bending of the joints he mainly refers to the stifle and hocks.*



To learn how to achieve these benefits through correct execution of the exercise, Guérinière left us with a diagram which can be seen on the left. Interestingly, this diagram indicates that the horse should be moving on four tracks instead of three, which seems to be the ruling doctrine nowadays. **Alois Podhasjsky** had some excellent thoughts about how to deal with this controversy in modern times

''Nowadays there are different opinions as to the degree of the angle which horse forms to the wall in the shoulder-in. In opposition to de La Guérinière's theory, it is maintained that the forehand should be taken to such a degree that the inside hind leg follows exactly in the tracks of the outside forelegs, thus making a single tracks, so that three instead of four hoof prints appear. This interpretation generally lead to a sort of outline of a shoulder-in, and the inside foreleg does not cross sufficiently over the outside one. In this case, the purpose of the exercise – the bending of the three joints of the hind legs, the freer movements of the shoulders, the improvement of the contact with the bit, and the increase of suppleness and obedience – will not be achieved. Neither can the bending of the three joints of the hind legs – the chief object of this exercise – be achieved by the horse adopting an exaggerated position, because then the horse, instead of bringing the shoulder-in, will allow the hindquarters to fall out and exercise a kind of yielding to the leg; and yielding to the leg will never lead to a correct bending of the hind legs. Therefore, when judging the shoulder-in, the expert should never allow himself to be involved in controversy as to which of the two doctrines is the correct one, but he should look to see whether the exercise is executed in the same better on both reins. If, however, the horse has little position on one rein and as much as Guérinière demands on the other, then neither of the two version is adhered to, but the exercise is presented just as the horse thinks fit, which is wrong and useless. A horse will always take his shoulder-in better on the rein on the side on which he accepts the bit and avoid the discomfort of the exercise by overbending his neck on the other, the hollow side.''

So in short, it is not worth to get lost in doctrines, but rather look whether the horse is achieving the benefits accredited to this exercise as without this essence, it doesn't have any purpose. For me personally, I prefer the three-track shoulder in for horse who have the tendency to leg yield and perform more like a quarters-out. From there, I can introduce transitions to the travers to connect the outside hind limb and build up to a four track to engage the outside shoulder more inwards. But there are no general rules. As long as the bending of the joints is achieved, I don't care about the number of tracks.

This way of gradually developing the shoulder in was also enhances by **Gustav Steinbrecht** who wrote that the shoulder-in must be developed in stages. He explained ''in the beginning, the forehand should only be moved about 30-40 cm to the inside so that the horse first learns to step with its inside leg not toward but in front o/the outside leg.'' He referred to this first degree of the exercise as the 'trot position'. From there, he would gradually increase the lateral position together with its bend.

As such, **Steinbrecht** furthered the understanding of the conditions preparing the horse for the gymnastic exercise creating the concept of the shoulder fore. Steinbrecht's theory was that the horse's shoulders were narrower than the haunches, causing the horse to travel with the outside shoulder in front of the outside haunch. Steinbrecht's idea was to push the horse's inside shoulder in front of the inside haunch while maintaining the haunches absolutely straight. The only way to achieve this was to bend the thoracic spine laterally. Thus, Steinbrecht discovered the fact that transversal rotation, induces lateral bending and called this shoulder fore. The body coordination created by the shoulder fore allowed greater freedom of the horse's movement preceding the more challenging shoulder-in.

On the shoulder-in itself, he stressed the importance of the essence of lateral bending and collection: *''Never forget, that the stepping over [of the legs] is not the purpose of the exercise, but only a yardstick for the correctness of the position (…) The correct shoulder-in as a basic pillar of dressage training does, however, free, the shoulders and with them all of the horse's limbs, not by the lateral movement, but through flexion and collection it requires.''*

The legacy of these brilliant masters resonated through the 20th century where Portuguese Master **Nuno di Olivera (1925-1989)** stressed the importance of the shoulder-in further, stating that *''The shoulder-in is the aspirin of horse riding that cures everything''.* He was known to start regular training with a few minutes of trot after which he immediately started with the shoulder-in – especially on the straight lines but also on the volte: *''I never begin the training of a horse by giving him a lesson other than the shoulder-in.''* He emphasised that the essence of the exercise is best served in trot by stating that: *''*The exercise of shoulder-in correctly executed at the walk, and above all, at the trot, will make

the horse bend and use the joints in his hind legs while causing him to grow greater in the forehand.''

Nuno Olivera on Farista. To the left: shoulder-in at the walk showing slight bend; to to right: shoulder-in at the walk showing a more accentuated bend.

Miquel de Lancastre e Tavora was also known to be a big fan of the movement: ''*The shoulder-in is the first lateral movement I train a horse to do. I don't teach leg yielding because exercise without bend don't develop suppleness. Furthermore, the leg yield teaches the horse to disengage the outside leg as the inside leg crosses over it.''*

Furthermore, he agreed that the exercise should be trained gradually and adjust to the development of the horse: *''The shoulder-in is mainly a training exercise and the angle of it depends on the horse's conformation, and the objective at the time.''*

So by now it should be clear that the shoulder-in is a corner stone within classical dressage as without it, no other lateral movements can be started. Now that you are aware of its importance, you might wonder about how to execute it correctly. Again, luckily, many masters elaborated on the teaching process and aids in a very detailed way. However, keep in mind that back in those days, horses were mainly trained in a curb bit only.

Let's start with the father of shoulder-in, **La Guérinière** who said the following: *''On the straight line along the wall, is necessary to turn his head and shoulder slightly inwards, toward the centre of the school, as if one actually wanted to turn him, and when he has assumed this oblique and circular posture, one must make him move forward along the wall while aiding him with the inside rein[5] and inside leg.''*

[5] The aiding of the inside rein referred to is the 'appui' or supportive rein contact in which the surface area of the rein is gently pressed against the inside neck muscles.

However, this action of inside rein and inside leg has a great danger of losing the true essence of the shoulder-in, namely the correct inside bend. This was recognized by **Steinbrecht** who wrote that: *''The actual essence of the shoulder-in is not the yielding of the inside rein and inside leg but a lateral movement based on increased latera flexion of the horse's entire body and regulated by the correct weight distribution to the four legs.''*

Later on, also **Nuno Oliveira** warned against this practise stating: *''Beware of the so-called shoulder-in, so frequently seen, in which the rider pulls on the inside rein while leaning on the same side, with his leg drawn back to jab the horse with the spur, which forces the poor animal to move laterally while remaining twisted, and which takes all impulsion away from the horse, leading to resistance against the rider.''*

So although La Guérinière invented the shoulder in, it were the later masters who furthered a more refined set of aids appropriate to serve the coordination suited for correct lateral bending. It is probably **Steinbrecht** who left the most detailed description of the aids. His explained begins by turning the forehand to the inside *''to such an extent that its forelegs travel on the intended inner line on which they will remain just as the hindquarters must remain on the original line. The inside rein, supported by the outside rein, initially produces a turn of the forehand, with both of the rider's legs keeping the hindquarters on the outer line.''*

So initially, the first step is to really ask the shoulders inwards by means of the reins only. From there, the lateral movement begins. Steinbrecht explains: *''The lateral movement begins, with the outside rein guiding and the rider's inside leg acting stronger, together with the inside rein, not only to maintain flexion [bending] but also to cause the horse to yield, while the rider's outside leg, together with his inside leg, guides the hindquarters and support the outside rein during collection. Since in this movement the bending inside leg simultaneously drives sideways, it is obvious that the horse, by yielding from this doubly strong aid, will try to escape the flexion by falling out with its hindquarters. The rider must therefore produce the correct opposition to his inside leg by well-adjusted use of the outside rein and leg to keep the pace regular and not let it degenerate into sideways. In the shoulder-in, the rider must therefore often work more with outside rein and leg and even put his weight ore on the outside so as to always remain in control and be able to determine the degree of sideways travels of the horse's outside legs.''*

Well that certainly is a lot to get your head around isn't it? So basically, the turn of the shoulders is done by means of both reins. Then, the inside leg is added to enhance the correct bending. The outside leg is prevented from falling out by the appropriate opposition from the outside aids of both rein and leg. Steinbrecht specifies the role of the outside rein by explaining: *''In the shoulder-in work the outside rein is of great importance because it has the dual task of guidance and collection. By acting toward the inside it initially guides,*

together with the inside rein, the shoulders to the inner line and then prevents them from deviating toward the outsides, that is, it prevents the forehand from falling out and the outside front leg from stepping too far out and to the side. By acting towards the outside, the outside rein guides the forehand sideways on the intended line and, when weighted with elevating half-halts, it puts weight onto and flexes the outside hind leg. During turns and collection, the outside rein is supported by the rider's outside leg which must prevent the croup from falling out. For guiding, however, the outside rein is supported by the rider's inside leg which must drive the hindquarters sideways in harmony with the forehand which is guided by the outside rein.''

So basically, Steinbrecht acknowledges that in order to execute a shoulder-in with true essence in mind, the correctness of the bend and of the pace depends of the control of the outside hind leg: *''The rider must especially drive the free outside hind leg correctly underneath the load since the inside hind leg is sufficiently secured by the lateral bend and the increased action of his inside leg.''.*

He specifically warns against too much inside leg by continuing his plea stating *''It is therefore a great error if riders, at the beginning of shoulder-in work, force their horses sideways with the inside spur because they believe the yielding to the spur and crossing over are the purpose of the exercise.''*

So by now you should have an idea of the function and importance of the outside rein and leg to induce correct lateral bending. However, you might now think how to coordinate your aids appropriately. Luckily, Steinbrecht shared his thoughts on the fact that the proper coordination is derived from the proper coordination of the seat*: ''A certain taking back of the riders' inside shoulder, however, results from the bend of the forehand just as naturally as this bend take the rider's outside shoulder forward to the extent that the rider's shoulders are in the same directions as those of the horse. Only in this carriage of the shoulders will the outside hand be able to perform correctly its triple task, namely: to determine the degree of flexion, to maintain the necessary collection; and to guide the forehand. In the same way, the position of the rider's hip parallel to the horse's hips will bring the rider's legs into the correct position. From this position of the rider, which the correct shoulder-in gives him naturally, the predominant action of his inside leg and outside rein result quite automatically. One can therefore almost say that the rider is able to keep a horse that is correctly flexed in all its parts in the correct shoulder-in with these aids alone while merely having the counter-aids in readiness.''*

So basically a neutral seat that corresponds with the proper coordination required for the movement asked of the horse should automatically places your shoulders and thus your hands and legs in the right position. It is thus a great mistake for any rider to lean inwards as is so often told in modern time. **Nuno Oliveira** warned against this practise by stating that

''Riders most frequently make the mistake of leaning towards the inside. Amongst other inconveniences, this load the legs which are under the greatest strains. This may be avoided by leaning on the outside stirrup.'' Furthermore, in a correct neutral seat the *''inside leg must stay by the girth, above all never going farther back''* while the ''outside leg acts softly but firmly a little further back than the other leg in order to keep the incurvation and degree of obliquity required for shoulder-in.''

The position of a more forward outside shoulder naturally prevents a limiting outside rein as this rein has always to be given slightly forward so that the outside front limbs of the horse has the freedom to step inwards and forwards. The inside shoulder naturally comes back as the horse brings its inside shoulder closer to its inside hip. This results in the inside rein coming a bit closer towards the outside shoulder but never against and at all times giving forward to avoid inducing inverted rotation.

So now that we've almost covered all layers, it is time to look at half halts. **Steinbrecht** writes that *''in the shoulder-in the rider maintain the correct lateral movement by half-halts in that he uses them to regulate contact, pace and collection.''* The half halts are mainly meant to produce a collecting effect since the *''forward driven hind legs must now bend under the weight''.* According to him, these collective half halts are not too difficult, but instead, ''*the main difficulty is to let the outside hind foot step sufficiently forward and yet keep sufficient weight on it (…) Thus, in the shoulder-in the outside rein and leg must predominate while in the travers and renvers the outside reins and the inside leg predominate during the collecting half halts.''*

The collecting half halts have to be finely adapted to the cadence of the gait which must be given in alteration with the likewise cadenced, light leg or spur aid, not simultaneously. If thrust is to be reduced, the hand will act first and then the leg, while the leg aids must precede the aid from the hand if the hindlegs are not sufficiently active. However, a collecting half halt shoulder never results in a loss of freshness which must be *''evidenced by lively raising and a longer suspension of the bent leg as proof that the body is in secure balance on the supporting legs.''*

Finally, challenges and troubleshooting should be addressed. The most common mistakes are the horse trailing out with the outside hind or falling. When this happens, the masters proposed different remedies. **La Guérinière** suggested to go back to the circle in both of these cases: *''One will take him at a collected walk on a large circle and will, from time to time, take him away from the cross-stepping of the inside legs over those of the outside; such that, while enlarging the circle more and more, one will gradually arrive at the line of the wall and the horse will find himself in the posture of the shoulder-in, and, in this posture, one will make him take a few steps forward along the wall. One will then stop him, bend his head*

and neck, while playing with the bit in the mouth on the inside rein, praise him and dismount.''

If this also didn't work or the horse would be resisting and not willing *''to give in to the subjection of this lesson [the shoulder-in] it is necessary to leave it for a while and return to the first principles of the lengthened and vigorous trot as much on a straight line as on a circle; and, when the horse obeyed, one will return to the shoulder-in in at the walk along the wall and, if he goes well for a few steps, one should halt, praise him, and dismount.''*

Steinbrecht offered a few different solutions to each problem: *''If the croup falls out the outside hind forcibly frees itself and must be pulled back again. This can only be done by the spur if the respect for the spur is already great than the aversion to the requested flexion. Otherwise, the outside rein must moderate the flexion until the spur is able to control the hind leg. More weight on the hind leg transferred from the forehand by means of half-halts from the outside rein and the rider's weight in a seat in which the outside hip is set back will secure success that much faster.''*

However, in some instances he would prefer a different method: *''If the croup drops out and if he cannot prevent this with his outside leg supported by the outside reins, the rider quickly lead the forehand towards the outside to the line of the hindquarters.''*

For the opposite problem he wrote *''If the forehand is stuck, flexion must be reduced and the hindquarters brought toward the inside to the line of the forehand so that the timely approach to the straight direction always maintains the effect of thrust toward the forehand.''*

Finally, he sometimes used the counter shoulder-in to correct certain problems: *''Horses that do not yield sufficiently to the rider's inside leg are flexed insufficiently or incorrectly, usually too much in the neck and not enough in the poll and spine. They must first learn to listen to the spurs. The counter shoulder-in is better suited for such correction with stronger spur aids than the shoulder-in.''*

So in summary, a lot has been written about the shoulder-in. I think I have never elaborated on its history more than any other exercise but I find it key to share with you the original works of the old masters so you better understand the essence of the exercise.

By now it should be clear that it is a complicated exercise and takes years to develop correctly. Since I quoted a lot of **Steinbrecht's** work I'd like to conclude this section in his own words *''If I now close this important chapter, it is done with serious admonition to every rider to unflaggingly study the correct shoulder-in and to consider it as the main pillar of all dressage through which he obtains and develops from the horse everything that nature has*

given it and which also enables him to thoroughly eliminate errors in carriage and movement that have crept in from incorrect work. Riders who fully recognize the wonderful power of this exercise will not trouble themselves with making their horses flexible and obedient by constant changes into the most varied positions because they know that all other movements then need for attaining their intended goal evolve from the correct shoulder-in, be it the well-established balanced carriage, be it the carriage on the haunches.''

PREPARATION

Before asking the shoulder-in, the horse should be familiar with the basic aids. To ask a shoulder-in we need the shoulder to come in and the inside leg to step under.
Thus, the horse has to be familiar with the use of the rein with which we ask the shoulder in. The horse should also be familiar with the whip aid at the inside girth-area when in groundwork or the inside leg aid when ridden, to ask the inside leg to step under.

When the horse is familiar with these aids, we can prepare the body with the shoulder fore, before asking the shoulder-in. As Steinbrecht discovered, this exercise will allow for greater freedom of the horse's movement, and thus, will make the step to the shoulder-in easier and not as big of a step.

Good preparation is key since the shoulder-in is the easiest exercise to perform poorly and remains the most difficult to execute well.

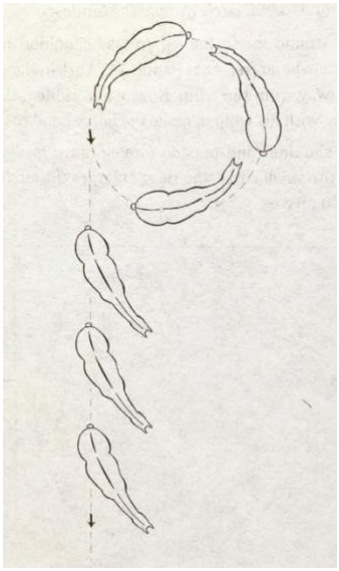
STEP-BY-STEP PROCESS

The basic aids include inner intention, body posture, voice, rein and whip aids.

GROUNDWORK – ONE REIN (CAVESSON)
To teach the shoulder-in you can start along the wall or fence to make it easier for the horse as this provides stability. Do take in mind that this stability can also be a pitfall, namely that the horse can be more likely to fall over the outside shoulder and back towards the fence, this of course makes the shoulder-in more difficult to perform.

Furthermore, since the groundwork position doesn't include a direct outside rein this is actually the most advanced position and requires a lot of self-carriage. Therefore, it is not suited for all horses to start the shoulder-in this way. It proves to be too difficult, start with two reins instead.

1. Prepare the exercise by following the arena wall either after a corner or after a 20m circle. Either moves backwards or forwards. From there, slow down the walk and bit and choose to either keep on moving or halting the horse to prepare the optimal coordination. Usually, in the beginning the halt is easiest as you don't have a direct outside rein but always act which way is easiest for both you and the horse:



   - In movement: Pretend as if you want to turn the shoulders inwards – almost imagine going travelling on the circle by coordinating your body and aid as such. Make one step to the inside and coordinate your shoulders in such a way that the horse has space to come in. Open the inside rein to ask for lateral flexion and ask the outside front limb to step inwards. As soon as the horse initiates the circular posture then make an upwards half halt and continue in a forward direction while asking the inside hind limb to step under with the whip.

   - From the halt: Ask a downward transition to halt at the straight line along the wall. Make one step to the inside and coordinate your shoulders in such a way that the horse has space to come in. Open the inside rein to ask for lateral flexion and ask the outside front limb to step inwards. If needed, you can assist with a whip aid in front of the outside shoulder to ask it in. Once the horse is positioned in the correct coordination for the shoulder-in, add movement by asking the inside hind limb forward. Half-halt if needed when the horse pushes too much. Ask a few steps before halting again and reward.

2. Keep a strong inner picture throughout in which you remember that the essence is about inducing correct lateral bend. Therefore always double check that the movement is about the shoulders inwards and not the quarters outwards. Since you don't have an outside rein the control of the shoulders is much more difficult.

   - When the shoulders are drifting to the outside: Check your own body position. You can invite the shoulders back in with a directional half halt when the outside front limb is in the air to draw it inwards. Be aware not the give half-halts when the limb is still on the ground, as the horse is likely to compensate in other areas of the body by rotating limbs. Once the half-halt is given and the horse response, release the aid allowing the horse to keep the forward. Make sure not to pull. If the horse doesn't responds and only overbends you'll have to release any aid on the rein and instead provide whip aids to serve as an outside rein.

Either cross the whip under the horse's neck towards the outside shoulder or place it over the whither to the outside shoulder [depending what works] and gently tap it in the rhythm of the outside front limb so it serves as an outside rein. Release as you as the horse yields.

- When the horse is falling to the inside: if the horse comes off the track completely either make a circle or straighten the horse up again towards the wall. In some cases, a half halt timed on the inside front limb might also work.

3. If the control over the shoulder feel well, closely mind the proper coordination of the hind limbs in which it is just as important that the inside hind limb steps under and lowers, but that the outside hind limb keeps supporting forwards – and not sideways. Control the hindquarters with your intention, half halts and whip.

   - If the inside hind limb doesn't step under you can repeat your whip aid. Give a whip aid at the area of the inside leg to ask this hind leg to step under. Use it only as a 'visual' pointer stick at first. If the horse is not responding or does not understand, you can slightly 'tap'. Keep in mind that your whip should be ask the horse to step forward as well to prevent your horse from going too far sideways.

   - A whip aid at the inside girth area can be given to enhance the correct later bend.

   - If the outside hind limbs drift out, you can use a haunches-in whip cue to draw it back in. No to fully produce haunches-in but simply to straighten. As soon as the outside hind limb connects again you release the aid and think forward.

     If the horse doesn't know the traversal aid yet, you can also just try to close the angle by bringing the shoulders closer to the wall again.

Left: outside hind limb tracks out, *Right: it goes forward.*

4. Reward every good try. Remember, the initial phase is crucial for the horse's understanding of the aids and the associated physical and mental response to make sure that you know what you're rewarding and what not.

5. Then, straighten up. Especially in the beginning, always start with a few steps after which you always straighten the horse's body, to prevent the horse from falling into the next corner. Therefore, consider the straightening up as part of the exercise.

6. Take the horse slowly with you step-by-step and build up. Keep quality over quantity and don't tire the horse. Make sure it is both enjoyable for yourself and your horse☺

WORK IN HAND & LONG-REIGNING – TWO REINS (CAVESSON OR BRIDLE)

From the position of two reins, the shoulder-in can be practiced only by moving forwards. The steps you take when working with two reins are similar to those when working on one rein, but with the advantage of having a direct outside rein. For horses who have a strong tendency to overbend or learned a previously wrong posture, the teaching process with two reins is usually most efficient before returning to one rein to check the self-carriage.

1. Follow the same process as described under groundwork, but instead use the direct outside rein to control the outside front limb. In shoulder-in we use the rein to ask the shoulders to step into the arena and also to keep the shoulder in the correct position.

2. Make sure that your hands are always above the point of noseband or bit to never ask for downwards pressure creating a draw rein effect.

3. Ask a slight lateral flexion with the inside rein after which you turn the shoulders inwards by use of the outside rein. As soon as the shoulders move inwards, you release the outside rein more forward.

4. As a rule, in a correct shoulder-in there should never be more pressure on the inside rein than the outside. If the horse yields for the lateral flexion, the inside rein is just 'there'. As a result of the bending you should feel the body of the horse 'filling' up the outside rein. Whenever this is not the case, the essence of the exercise is not there.

Never pull on the inside rein

Instead: give forward!

5. Enjoy the process and don't tire the horse too much☺

<u>RIDING – TWO REINS & SEAT (CAVESSON OR BRIDLE)</u>

When performed ridden, the aids of the seat are added to those of intention, body, posture, and reins.

The seat aids, when performing the exercise ridden, are often the most confusing. Many different methods describe different aids, some say the weight should be on the inside seat bone to guide, some say on the outside. However, the essential element is still lateral bend, therefore you as a rider should remain vertically balanced over the seat bones in the direction of the bend.

1. Start by feeling your horse's barrel swing (left-right movement) and reduce your ROM to match that of your horse. This is not the same as stiffening, but to produce a soft, neutral seat that doesn't disturb the horse.

2. Position the horse as explained in the work in hand section using both reins. In the words of Steinbrecht, your seat should be aligned the following way: *''A certain taking back of the riders' inside shoulder, however, results from the bend of the forehand just as naturally as this bend take the rider's outside shoulder forward to the extent that the rider's shoulders are in the same directions as those of the horse. Only in this carriage of the shoulders will the outside hand be able to perform correctly its triple task, namely: to determine the degree of flexion, to maintain the necessary collection; and to guide the forehand. In the same way, the position of the rider's hip parallel to the horse's hips will bring the rider's legs into the correct position. From this position of the rider, which the correct shoulder-in gives him naturally, the predominant action of his inside leg and outside rein result quite automatically.*

   It is important that while doing so that you don't tilt in your weight and stay vertical over your seatbones in tune with the bending of the horse. This would mean to advance your outside thigh while having a bit more space on the inside.

3. Keep your inside leg at the inside girth area – never further beg – and use your lower leg only in the rhythm of the outside hind limb to ask it to step under.

   Be careful to not use your inside thigh as this would press the ribcage and result inverted rotation. When the horse is having trouble putting its leg under or if you have a tendency to cramp with your leg, you can assist with a direct whip aid on the inside hind limb to ask it under. Be sure to remain soft.

4. Keep your outside leg slightly backwards and have it ready in case the horse drifts out over the outside hind leg in which you apply a lower leg aid to place it back in. So sometimes you need a momentary haunches-in aid to produce a good shoulder-in.

5. Assist with a lifting half-halt of both reins if needed when the horse pushes through the chest or tightens behind the bit and/or cavesson.

   Keep the outside shoulder in place with your outside rein. A half-halt is given when the outside front limb is picked up, guiding the horse to step the leg forward and not to the side.

   Never pull on the inside rein. Only restore slight lateral flexion if needed, but mostly give forward with this rein.

6. Enjoy the process and don't tire the horse too much☺

CHALLENGES & TROUBLESHOOTING

As already mentioned, you may come across a few challenges when practicing this exercise with your horse. While most of it has already been mentioned, I can't stress its importance enough as the shoulder-in will provide the physical and mental benefits only when executed with proper shape and coordination. Therefore, keep 'scanning'.

1. **Falling on the inside shoulder**
   Naturally horses turn by pushing the weight unto the inside front limb while placing the head/neck to the outside as a cantilever. This is why counter bend appeals more to their natural tendencies while inside bend is a more alienated shape. Therefore, the falling on the inside shoulder is quite common. When this happens, the horse usually also tilts with the head and becomes heavier on the inside rein.

To restore this problem, rebalance the horse vertically with use of the outside rein.
A few steps of counter shoulder in or renvers might also help if the horse is advanced enough to do this.

2. **Falling over the outside shoulder.**
   See the groundwork and work in hand section. Usually, this is a result of improper aids by the rider. It can happens when you push the inside hind away before you have actually asked the shoulders inwards. This is a common mistake. Furthermore, it might be because of overbending in the head and neck or pulling on the reins. Furthermore, on the ground your body position might block the horse. Always check your aids and when you find which one is blocking this should usually correct the problem.

3. **Falling on the forehand and dropping too low in the neck.**
   On the ground, this usually happens due to the horizontal imbalance of the horse or a pulling forwards on the cavesson noseband to ask the horse to transition into movement. Engaging of thoracic sling muscles is vital.

   In groundwork, you can resolve the problem by placing your hand next to the cavesson and to ask the horse forward by means of a whip aid from behind instead. Always think the horse moving from the hind limbs into your hands.

   When working with two reins and ridden, make sure the position of your hands is not too low – i.e. below the point of bit of noseband. This – unintentionally – creates a draw reins effects and forces the horse downwards. Furthermore, make sure to make enough lifting half-halts to encourage the horse to lifts its thoracic sling throughout and to promote postural changes. You can use your lower legs to encourage the hind limbs to travel under further as well.

4. **Trailing of the outside hind limb / leg yielding.**
   In a correct lateral bend, the horse will always have to remain in a proper forward. That means, feet and nose pointing forwards to the direction of travel. When the horse is stiff lateral bending is difficult, the horse might lose the forward and start travelling sideways rather than really bend through its body.

   When the outside hind leg starts to travel sideways, you'll end up performing leg yielding along the wall and not having the benefits of the shoulder-in. It might give the optical illusion of the shoulder-in, but it has no physical benefits for the horse.

   If the horse starts travelling too much sideways in lateral movement, you can close the angle and or apply momentarily aids for the opposite movement to control the

straightness and forward. For example, a horse that trails out behind in the shoulder-in – than it is more a haunches-out or leg yield than a true shoulder-in – can be restored in shape by providing a momentarily haunches-in cue just enough so the outside front limb and pelvis align forward again and then continue in the shoulder-in. This way, you use the exercises in a close relationship as a means to and end rather for the exercise on its own.

5. **Moving on too many tracks.**
   When a horse moves beyond four tracks, the exercise will lose functionality and could even do harm. Very often this is caused by too much aids of either legs, whip or seat. Minimize the aids and restore the proper alignment by asking the horse a couple of steps forward and straight. If the horse is too stiff, the lateral bend is hard and therefore it might choose to 'overdo' the sideways as a way of pushing and avoiding the bend. Slow down the horse even more and focus on even less angle [2,5 tracks is enough in the beginning] and build up the flexibility so that eventually the horse can travel unto three tracks properly.

6. **Haunches-out.**
   A common first mistake is asking the inside hind leg under the body before the shoulders are actually turned in. Shoulder-in is not haunches-out. Driving the haunches-out first usually aids in inverted rotation, therefore, make sure to ask the shoulders in first as usually the inside hind leg will start to step under naturally. When you feel you don't have control over the outside shoulder, being unable to bring it in your horse might just not be ready for this exercise yet. If this is the case, you have to return to improve the vertical and horizontal balance and regular lateral bend.

7. **The outside leg steps under but doesn't lower.**
   A horse can perfectly bring the leg in while keeping it straight. Therefore, it is really key to keep in mind that in a correct shoulder-in, the stepping under is not sufficient. The horse shoulder also lower and bend through the joints evenly. Slow down the pace to really encourage the lowering and assist with a few upwards half halts to engage the thoracic sling if necessary.

8. **Tilting of the head.**
   Always check if the ears are levelled. Tilting usually is a sign of spinal or pelvic misalignment or limiting reins. Check if you're not 'holding' your horse too much and that there is no over bending. If the tilt remains, go back to vertical balance and opening the jaw with lateral flexion and try again.

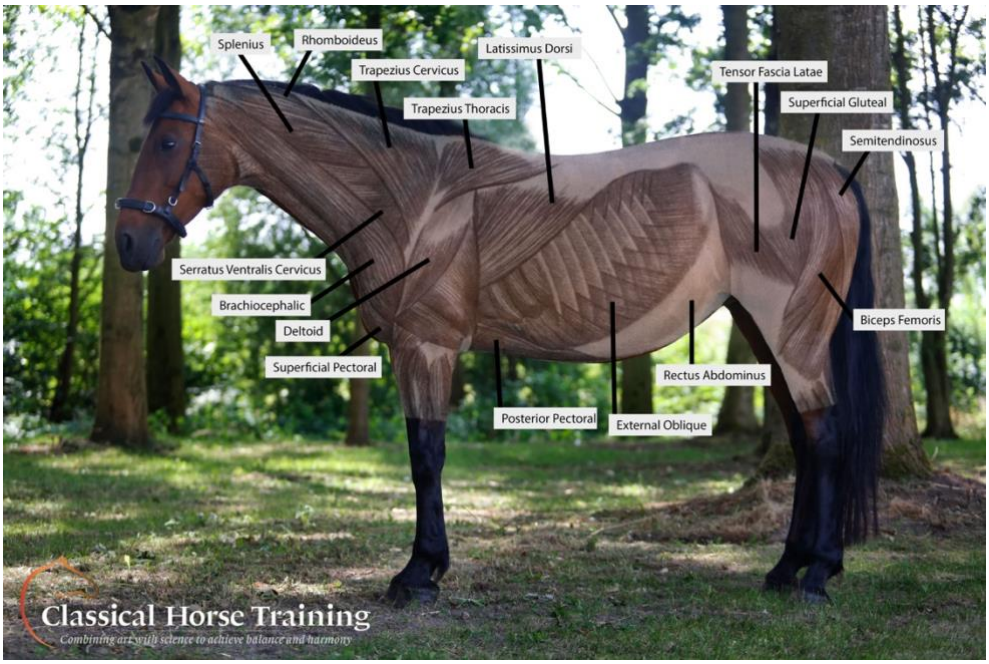
9. **The horse doesn't take the right shoulder-in shape**.
   This is okay, especially in the beginning we can't expect this from the horse. These small errors will be improved once the horse starts to understand the aids and the exercise. Remember to take it step by step!

10. **Fatigue.**
    Remember, circles are the hardest exercise for the horse as it is completely alien to their natural way of turning. Therefore, don't overdo it and give plenty of breaks and variation in between. Same goes for lateral movements.

You might feel a bit overwhelmed, but rest assure, the master has failed more than the beginner ever tried☺

RELEVANT STRUCTURES

As you are aware by now, the body is interconnected. Therefore, the shoulder-in requires full engagement of the entire body and mind of both rider and horse. Below you can find some of the most important muscles and soft tissue activated by this posture.



DELTOID

Function(s): Abduction of the limb and flexion of the shoulder.

Origin(s): Cartilage and Spine of scapula, and the Infraspinatus via an aponeurosis attachment.

Insertion(s): Humerus → deltoid tuberosity.

Innervation: Axillary

Notes: When performing a lateral movement, the deltoid muscle is highly activated and shows a significant change in tone and condition as the horse advances.

SUPRASPINATUS

Function(s): Stabilization and extension of the shoulder joint.

Origin(s): Scapula, cranial to the spine, the spine of scapular and cartilage.

Insertion(s): Humerus → greater and lesser tubercles.

Innervation: Suprascapular

Notes: The supraspinatus divides into two branches before insertion. The medial branch acts as a medial collateral ligament of the shoulder joint. During cranial and/or laterl trauma to the scapula or compression of the nerve, a variable amount of atrophy occurs in this muscle

INFRASPINATUS

Function(s): For flexion and stabilization of the shoulder. It assists in abduction and it rotates the forelimb laterally.

Origin(s): Infraspinous fossa, cartilage of scapula plus aponeurotic tendinous fibers into teres minor.

Insertion(s): Humerus → 1) Convex area between the cranial and caudal tubercles of the greater tubercle
2) Caudal tubercle of the greater tubercle.

Innervation: Suprascapular

Notes: The Infraspinatus and Supraspinatus muscles are connected via a fascial septum as the spine of the scapula distally regresses. Atrophy of this muscle occurs under the same conditions that influence the Supraspinatus and accordingly the shoulder is destabilized in is action.

TRICEPS

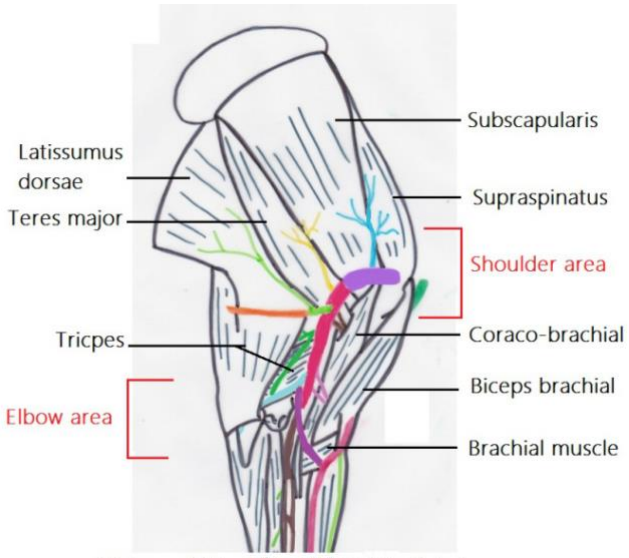
Function(s): The long head flexes the shoulder joint, whilst in conjunction with its lateral and medial counterparts extends the elbow.

Origin(s): Long head: Scapular → caudal border.
Lateral head: Humerus → dorsal deltoid tuberosity.
Medial Head: Humerus → mid, medial and dorsal.

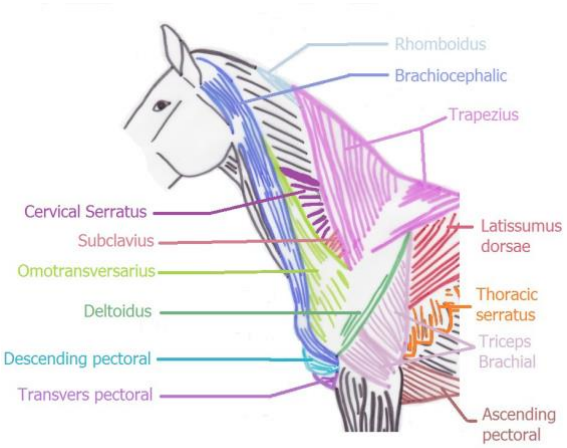
Insertion(s): Ulna

Innervation: Radial.

Notes: The long head of the triceps is the primary flexor of the shoulder. The medial had assists in the extension of the elbow joint. In 100% of ridden and driven horses the lateral head shows hypertrophy and becomes tender during palpation. This is due to the compromised elbow joint.



Veins of the Shoulder Medial view



ANCONEUS

Function(s): Extension of the elbow joint and raising of the joint capsule.

Origin(s): Humerus → dorsal distal aspect.

Insertion(s): Ulna → olecranon tubercle.

Innervation: Radial

Notes: The deeper fibers of this muscle consort with the joint capsule of the elbow. This helps in preventing the before mentioned capsule from being pinched during extension.

TENSOR FASCIA ANTEBRACHII

Function(s): Extension of the elbow joint and aiding in shoulder flexion.

Origin(s): Scapula →caudal border. Latissimus dorsi tendon.

Insertion(s): Ulna → olecranon tubercle. Medial deep forelimb fascia.

Innervation: Radial

Notes: This muscle blends with the origin of the long head of the triceps and can be palpated along its caudal edge before insertion, where it often feels like a tight band of tissue behind the long head of the Triceps. The length of the caudal part of the Tensor Fascia Antebrachia varies per horse in height and thickness.

TERES MAJOR

Function(s): It flexes the shoulder joint and adducts the Humerus.

Origin(s): Scapula→ caudal border

Insertion(s): Humerus → major tuberosity - mid medial aspect

Innervation: Axillary

Notes: The origin of the teres major blends with the Tensor Fasciae Antebrachia. The insertion point of the teres major fuses with the Latissimus Dorsi onto the Humerus.

SUBSCAPULARIS

Function(s): To fix the shoulder joint medially and adduct the Humerus.

Origin(s): Scapular → mid – distal medial surface.

Insertion(s): Humerus → Lesser tubercle caudal to the medial insertion of Supraspinatus

Innervation: Subscapular, cranial pectoral and axillary.

Notes: The subscapularis contains a great amount of tendinous tissue. It acts in conjunction with the supraspinatus to act as a medial collateral ligament.

TERES MINOR

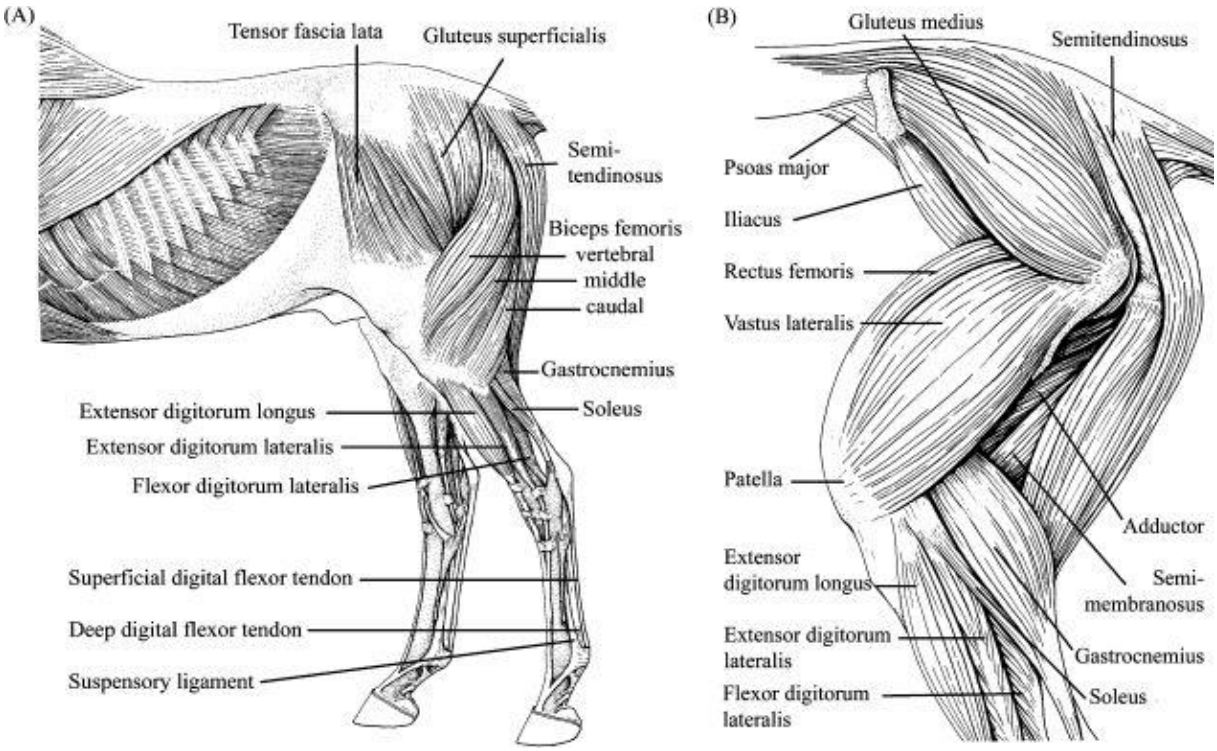
Function(s): To flex the shoulder joint and abduct the arm whilst also assisting in lateral rotation.

Origin(s): Scapula → mid caudal region
Infraspinous fossa
Glenoid Cavity → caudal rim

Insertion(s): Humerus → situated caudal to the greater tubercle of the Humerus between the insertions of the Infraspinatus and Deltoid.

Innervation: Axillary

Notes: The teres minor is a flat triangular muscle. It extends into the Infraspinatus and the Triceps by fibers, which are arranged in bundles and originate from the scapula.
The short and deep part of the teres minor lies caudal to the joint capsule of the shoulder. In trauma of the lower limb, the teres minor is usually activated and can become strained and sore to palpate.



SUPERFICIAL GLUTEAL

Function(s): Adducting the hind limb and flexing the hip joint while placing tension on the gluteal fascia.

Origin(s): Tubercoxae in partial partnership with the tensor fasciae latae. Gluteal fascia in vicinity of the sacral tuberosity.

Insertion(s): 3rd trochanter.

Innervation: Caudal and cranial gluteal

Notes: As the name suggests, this is the most superficial of the four gluteal muscles. It can be easily palpated. The muscle consorts with the Biceps Femoris.

MIDDLE GLUTEAL

Function(s): Extending and abducting the hip. When the femur is fixed, it raises the trunk.

Origin(s): Ilium; Aponeurotic covering of the Longissimus Dorsi, Gluteal Fascia; Dorsal Sacroiliac ligaments.

Insertion(s): Great trochanter of the femur.

Innervation: Cranial gluteal

Notes: This is a massive muscle and also the strongest of the gluteal muscle group. It forms the bulk and contour of the horse's rump and lumbar as it tapers dorsally towards and over the last 1-4 ribs. This is referred to as the 'gluteal tongue' and often atrophies when the sacroiliac subluxes. The tongue tapes to <1mm in its attachment into the Longissimus Dorsi.

Furthermore, It has a deeper portion which is not always mentioned in anatomy books or referred to as 'deep'. However, research performed by Sharon May-Davis showed this muscle being an individual entity separate to the Middle Gluteal.

The middle gluteal is strengthened by several tendinous sheets passing through the muscle.

DEEP GLUTEAL

Function(s): Adducting the limb while rotating medially.

Origin(s): Ilium and Sacro sciatic ligament

Insertion(s): Femur - Convexity of the greater trochanter

Innervation: Cranial gluteal

Notes: It is a strong thick muscle with multiple tendinous fibers running transversely along its length. Some of these fibers connect to the cranial aspect of the capsule that covers the hip joint.

PIRIFORMIS

Function(s): Assisting the middle gluteal and rotating the femur laterally.

Origin(s): Caudal sacrum and Sacrotuberous ligament.

Insertion(s): Femur → convexity of great trochanter

Innervation: Cranial gluteal

Notes: The *piriformis* blends with the *middle gluteal* at its origin. This muscle is often overlooked in anatomy books or considered irrelevant, but its size indicates otherwise.

BICEPS FEMORIS

Function(s): Extending and abducting the hind limb. Extending the hip, stifle and hock and flexing the stifle.

Origin(s): 1)3rd -5th h sacral dorsal spines,; 1st caudal vertebrae; gluteal fascia, sacroiliac ligament and Sacrotuberous ligament.

2) The primary origin arises from the Ischiatic tuberosity.

Insertion(s): Patella, lateral patellar ligament, femur, tibia crest, fascia latae and calcaneus.

Innervation: Caudal gluteal, ischiatic and fibular.

Notes: This muscle is one of a group of three known as "the Hamstrings". Due to its multiple points of attachment, it is a very complex multi-functional muscle. Rightfully regarded as the most powerful, its other two well-known partners are the *Semitendinosus* and *Semimembranosus.* Beginning with two heads, it quickly forms a single mass that soon divides into three parts. These quickly become visible in their division as it descends the leg.

Passes over the greater trochanter of the femur to insert via a separate tendon to that of the middle gluteal on the caudal femur.

However, its dorsal origin being so intimately connected to the *Superficial gluteal* has caused some confusion with other text. The divisions as they descend towards their insertions can separate and upon palpation feel like holes within the structure. This is often seen in Grand Prix dressage horses and appears quite manageable without too much ado.

SEMITENDINOSUS

Function(s): Extending the hip, hock and stifle and also flexing the latter one.

Origin(s): Pelvic head → ventral aspect of the Ischiatic tuberosity.
Vertebral head → spinous processes of the sacrum, transverse processes of the 1st – 2nd caudal vertebrae, Sacro sciatic ligament and the tail fascia.

Insertion(s): Calcaneal tuberosity, crural fascia and the tibia crest.

Innervation: Caudal gluteal and Ischiatic.

Notes: It is considered the 2nd strongest hamstring and lays between Biceps Femoris and Semimembranosus. Due to its location, it is susceptible to distal fibrotic myopathy. Furthermore, blunt traumas to the Ischiatic tuberosity, such as bumps during floating, can dislodge the Semitendinosus from its origin.

SEMIMEMBRANOSUS

Function(s): Adducting the hind limb and extending the hip

Origin(s): Pelvic head → ventral to medial aspect of ischiatic tuberosity
Vertebral head → Sacro sciatic ligament, 1st and/or 2nd caudal vertebra

Insertion(s): The two bellies of the muscle unite to insert at three places; the medial epicondyle of the femur, the medial collateral ligament of the stifle, medial condyle of the tibia and the media fascia.

Innervation: Ischiatic

Notes: Like the Semitendinosus the main origin arises from the Ischiatic tuberosity. Being the most medial of the hamstring group, it is susceptible to sliding stops or skidding and therefore fibrotic myopathy.

RECTUS FEMORIS
Function(s): Flexing the hip joint whilst extending the stifle joint.
Origin(s): Ilium of the pelvis → cranial to the deep gluteal.
Insertion(s): Patella

Innervation: Femoral

Notes: The Rectus Femoris is the largest of the four quadriceps group, but in several anatomy books it is incorrectly referred to as the *Vastus Lateralis.*

VASTUS LATERALIS
Function(s): Extending the stifle
Origin(s): Shaft of femur → lateral and cranial surface
Insertion(s): Patella in common with *Rectus Femoris.*

Innervation: Femoral

Notes: This is the second head of the quadriceps group and the most lateral one. Notably wider through the belly and narrower at its origin and insertion, this muscle works in unison on the patella with the *Rectus Femoris.*

VASTUS INTERMEDIUS
Function(s): Extending the stifle
Origin(s): Shaft of the femur → cranial surface
Insertion(s): Patella and femora-patella joint capsule

Innervation: Femoral

Notes: The Vastus Intermedius is extensively blended with the Vastus Medialis. In many textbooks this muscle is thus frequently reffered to as the Vastus Medialis and thought of as one with the same muscle rather than as an individual.

VASTUS MEDIALIS

Function(s): Extending the stifle

Origin(s): Shaft of the femur → medial surface.

Insertion(s): Patella, patella cartilage, medial patellar ligament and the Rectus femoris tendon.

Innervation: Femoral

Notes: This muscle closely blends with the *Vastus Lateralis.* It is regarded as the first in the quadriceps group. Being the most medial of the four it lies in a similar position to its lateral counterpart and has a similar fiber direction.

GRACILIS

Function(s): Adducting the hind limb

Origin(s): Pelvic symphysis, pubis and accessory ligament of the hip joint.

Insertion(s): Medial patellar ligament, tibia and crural fascia.

Innervation: Obturator

Notes: The most medial muscle in the horse's thigh. When viewed from the most posterior aspect of the horse this muscle appears to be large and fleshy.

SARTORIUS

Function(s): Adducting the hind limb and flexing the hip joint

Origin(s): Iliac fascia and tendon of the *Psoas Minor*

Insertion(s): Tibia and medial patella ligament in common with the *Gracilis.*

Innervation: Saphenous

Notes: A long narrow and comparatively thin muscle that extends from the sub lumbar region that follows the cranial border of the *Gracilis*. Stifle issues can influence *Psoas Minor* and it has been seen that the horse's lumbar will roach in direct correlation. I believe the connection may be between the insertions of the *Sartorius* acting on its *Psoas Minor* origin creating a banded tension and it is this that leads to the roaching in affected horses.

ADDUCTOR

Function(s): Adducting the limb, extending the hip joint and rotating the femur medially.

Origin(s): Pubis, Ischium and the tendinous origin of the *Gracilis.*

Insertion(s): Caudal aspect of the femur, medial epicondyle & medial collateral ligament of the stifle.

Innervation: Obturator

Notes: Totally covered by the *Gracilis, the Adductor* has a fleshy body that can be divided into two muscles; the *Adductor Brevis* and *Adductor Magnus.* Now if that isn't confusing enough, sometimes a third short muscle appears in the *Adductor* and is known as the *Adductor Longus.*

PECTINEUS
Function(s): Adducting the hind limb and flexing the hip joint.
Origin(s): Cranial border of the Pubis, prepubic tendon and the accessary femoral ligament.
Insertion(s): Femur medial mid shaft.

Innervation: Obturator

Notes: The accessary femoral ligament splits the origin of this muscle and virtually divides it into two unequal parts. A difficult muscle to palpate, especially in techy horses.

GEMELLI
Function(s): Rotating the femur laterally.
Origin(s): *Ischium* → lateral border near the Ischiatic caudal to the hip joint.
Insertion(s): *Femur* → trochanteric fossa and crest

Innervation: *Ischiatic*

Notes: The *Gemelli* has two divisions regarded as 1^{st} and 2^{nd} strata. Both insertions into the femur are in close proximity to the *Obturator* muscles.

QUADRATUS FEMORIS
Function(s): Adducting the limb while extending the hip joint.
Origin(s): *Ischium* → ventral surface
Insertion(s): *Femur* → Posterior surface near the *Adductor.*

Innervation: *Ischiatic*

Notes: A narrow slender muscle, the *Quadratus femoris* appears triangular in shape along its body. The parallel bundles of fibers are directed ventrally, cranially and laterally as they pass obliquely beside the hip joint.

CAPSULARIS
Function(s): Assisting in hip flexion
Origin(s): *Ilium* → close to the hip joint
Insertion(s): *Femur* → Cranial aspect

Notes: A reasonably short and innocuous muscle, the little known *Capsularis* has a round fleshy belly with flat tendons to both the origin and insertion.

POPLITEUS
Function(s): Flexing the stifle and rotating the hind limb medially.
Origin(s): *Femur* → Lateral epicondyle
Insertion(s): *Tibia* → Medial and caudal aspect

Innervation: *Tibial*

Notes: The origin of this muscle lies beneath the lateral collateral ligament of the stifle joint and therefore, has to pass through the joint capsule before travelling obliquely to its insertion. Its thick triangular belly is made up of fibers that initially travel medially from the origin before changing direction and inclining towards its insertion.

ILIACUS
Function(s): Flexing and rotating the hip joint.
Origin(s): Ventral surface of the ilium, ventral aspect of the sacroiliac ligament, wing of sacrum and the tendon of the psoas minor.
Insertion(s): Lesser trochanter of the femur in common with the tendon of the *Psoas Major.*

Innervation: *Lumbar and femoral.*

Notes: On the ventral aspect of the ilium, the Iliacus combines with Psoas major to form the *Iliopsoas* muscles. In fact, this intensifies the function of the Psoas muscles on the femur. It is a deep muscle being sub ilium and palpation is therefore indirect.

OBTURATOR EXTERNUS
Function(s): Adducting the thigh and rotating it laterally.
Origin(s): *Pubis* and *Ischium.*
Insertion(s): *Femur* → Trochanteric fossa

Innervation: *Obturator*

Notes: Circulatory vessels and nerves perforate the origin, while the muscle belly displays coarse and loosely connected fibers.

OBTURATOR INTERNUS
Function(s): Rotating the femur laterally
Origin(s) : Pubis and ischium Ilium and wing of sacrum
Insertion(s): *Femur* → trochanteric fossa

Innervation: *Ischiatic*

Notes: The iliac origin has been termed as a separate muscle known as the Piriformis. It contains a central tendon and has a pennate belly.

TIBIALIS CRANIALIS
Function(s): Flexing the hock
Origin(s): *Tibia* → Lateral surface and adjoining fibula.
Insertion(s): 2nd -3rd metatarsal and 1st-2nd tarsal.

Innervation: *Peroneal*

Notes: The second tendon passing over the cranial aspect of the hock to the 1st and 2nd tarsal and 2nd metacarpal is known as the Cunean tendon. You see this term mostly referred to in surgical text, but it has found its way out and can now be seen elsewhere. The fibers of TC are intimately connected to Peroneus tertius close to mid shaft of the tibia and stay this way until they divide into 2 tendons just dorsal to the tarsals.

TIBIALIS CAUDALIS
Function(s): Flexing the lower hind limb while extending the hock
Origin(s): Tibia and fibula head → Lateral condyle
Insertion(s): *Deep digital flexor* → close to the distal tibia.

Innervation: *Tibial*

Notes: Regarded as part of the Deep digital flexor it lays at the back of the gaskin with a fleshy belly that gives rise to a flattened tendon that joins the DDF shortly before the end of the tibia.

GASTROCNEMIUS
Function(s): Flexing the stifle and extending the hock
Origin(s): *Distal femur* → medial and lateral aspects
Supracondyloid fossa → either side

Insertion(s): Hock → Calcaneus

Innervation: *Tibial*

Notes: The heads from the origin quickly unite to form a common fleshy belly before tapering into the Calcanean tendon. This is a common tendon for 4 major muscles; Biceps femoris, Semitendinosus, Superficial digital flexor and the Gastrocnemius. Originating between the 2 heads is the Superficial digital flexor (also known as Plantaris).

SOLEUS
Function(s): Assisting the *Gastrocnemius*
Origin(s): Proximal Fibula
Insertion(s): Gastrocnemius tendon

Innervation: *Tibial*

Notes: A narrow thin muscle, the Soleus lies on the lateral border of the Gastrocnemius as it descends the Gaskin region of the horse. Its action is virtually non-existent in the horse and can be easily missed when dissecting the horse, even to the extent where one has to raise the question about its function, when in many cases it appears absent because visibility.

PERONEUS TERTIUS
Function(s): Allowing hock flexion when the stifle is fixed. Preventing overextension of the hock.
Origin(s): Lateral distal femur in common with the Long digital extensor.
Insertion(s): Calcaneus, 3rd and 4th tarsal, 2nd and 3rd Metatarsal

Innervation: P*eroneal*

Notes: This is an unusual muscle in that it is entirely tendinous in structure and as such, provides substantial support in protecting the hock from over extension.

LONG DIGITAL EXTENSOR
Function(s): Extending the hind limb, flexing the hock and assisting in fixing the stifle.
Origin(s): Lateral distal femur in common with the *Peroneus Tertius.*
Insertion(s): 1st-3rd Phalanx

Innervation: *Peroneal*

Notes: The long distal tendon of this muscle flattens along the 3rd metatarsal before meeting with fibers from the Lateral digital extensor tendon. It also resembles its thoracic limb counterpart the Common digital extensor tendon as it travels along the dorsal aspect of the 3rd metatarsal. This tendon should also be checked for similar issues as those found in its thoracic counterpart.

LATERAL DIGITAL EXTENSOR

Function(s): Assisting the *Long Digital Extensor*

Origin(s): Fibula and its ligamentous attachments to the tibia.

Insertion(s): Distal tendon of the Long extensor muscle.

Innervation: Peroneal

Notes: The muscle is pennate and fusiform with its tendon running the entire length of the muscle before passing laterally over the hock. Sometimes its insertion into the Long digital extensor does not occur and its inserts instead into the 1st phalanx like its corresponding forelimb counterpart.

DEEP DIGITAL FLEXOR

Function(s): Flexing the lower hind limb while extending the hock

Origin(s): Tibialis caudalis → lateral aspect of the tibia and the fibula.
Flexor hallucis longus → lateral aspect of the tibia, caudal to the fibula.
Flexor digitorum longus → lateral caudal aspect of the tibia.

Insertion(s): All three heads insert at the 3rd Phalanx → plantar surface

Innervation: *Tibial*

Notes: Regarded as the deep flexor of the lower leg, its 3 muscles unit close to the hock to form a powerful common tendon. This tendon then passes medial to the calcaneus. The characteristics of each of the 3 muscles range from fleshy to tendinous, which provides for strength and stability. It is a much larger muscle to its thoracic counterpart.

SUPERFICIAL DIGITAL FLEXOR

Function(s): Extending the hock and flexing the lower hind limb. It also keeps the hock in extension whilst the hip and stifle are as well (reciprocal connection).

Origin(s): Caudal distal aspect of the femur in the Supracondyloid fossa.

Insertion(s): 1) distal phalanx → medial & lateral
2) proximal phalanx → medial & lateral after it unites with the Calcanean tendon proximal to the calcaneus and inserts via medial & lateral slippers.

Innervation: *Tibial*

Notes: The muscle is extremely tendinous in structure and chiefly relies upon other muscle groups to act upon the limb. This gives it incredible tensile strength as its distal tendon spirals around the Gastrocnemius tendon from a medial to dorsal aspect creating more of a mechanical effect in its action. As it passes over the Calcaneus, a medial and lateral

attachment known as “slippers” insert before the tendon progresses distally. It is a much smaller muscle to its thoracic counterpart.

TENSOR FASCIAE LATAE

Function(s): Flexing the hip joint and extending the stifle whilst tensing the fascia latae.

Origin(s): Tubercoxae in partial partnership with the *Superficial Gluteal.*

Insertion(s): Fascia latae, Crural fascia of the leg, patella, lateral patellar ligament and the tibia crest.

Innervation: Cranial gluteal

Notes: The insertions into the patella, lateral patellar ligament and the tibia crest are regarded as indirect due to respective fascial tissue connections. The TFL has 2 muscle bellies close the Tubercoxae with the longer belly closer to the flank.

THE END☺