

A close-up photograph of a person's hand holding a green fabric sling. The hand is positioned at the top of the frame, gripping the edge of the fabric. The sling is a long, narrow strip of green material, possibly a towel or a specialized lifting device, hanging vertically. The background is dark and out of focus, with some light reflecting off a surface at the bottom. The text is overlaid on the center of the image.

Basic Exercise #3
The Sling Lift

Manual

Foreword

This document is the result of many years of research and personal experience world-wide. I sincerely hope that it will be useful for your learning experience and contribute to your personal development. This manual is complemented with a practical demonstration video to optimize the learning process. I wish you a lot of fun and lightbulb moments diving into these materials.

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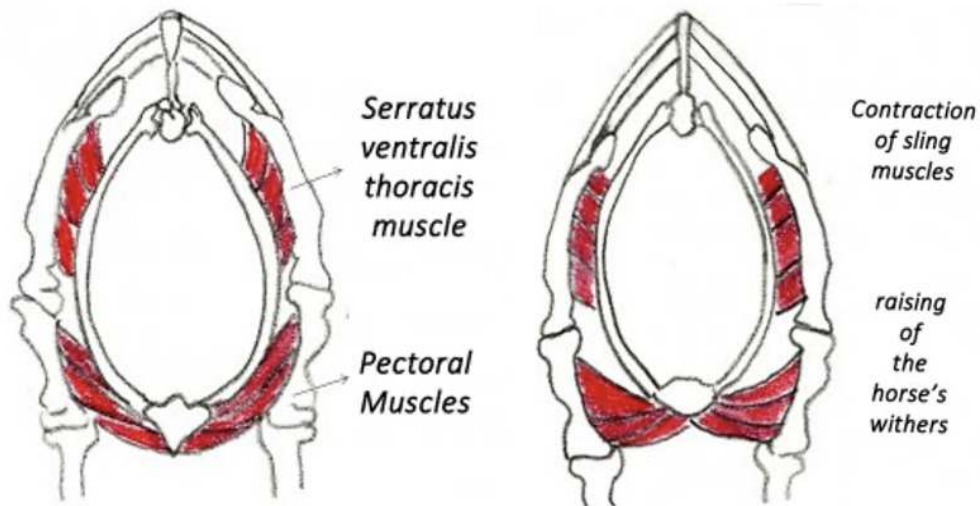
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This document has been compiled with great care to ensure the accuracy of the information. This document is part of Functional Horse Training Online Support Program. The content is therefore incomplete without the accompanying video. Thirza Hendriks cannot be held responsible for incorrect information in this document, or any damage caused by incorrect use of this information. This document does not replace veterinary diagnosis and no definite medical conclusions can be drawn from this document.

INTRODUCTION

This exercise is all about engaging the thoracic sling and to improve **horizontal balance** in the horse.

The thoracic sling has already been explained in the Anatomy section of this program. However, for the purpose of this manual let's dive into it a little deeper.



The thoracic sling of the horse is located between its front limbs and trunk. Unlike humans, horses don't have a collarbone. Therefore, they rely upon strong muscles which connect the inside of the shoulderblades to the ribcage. These muscle groups are called thoracic sling as they act like 'slings' that suspend the chest between the horse's front limbs.

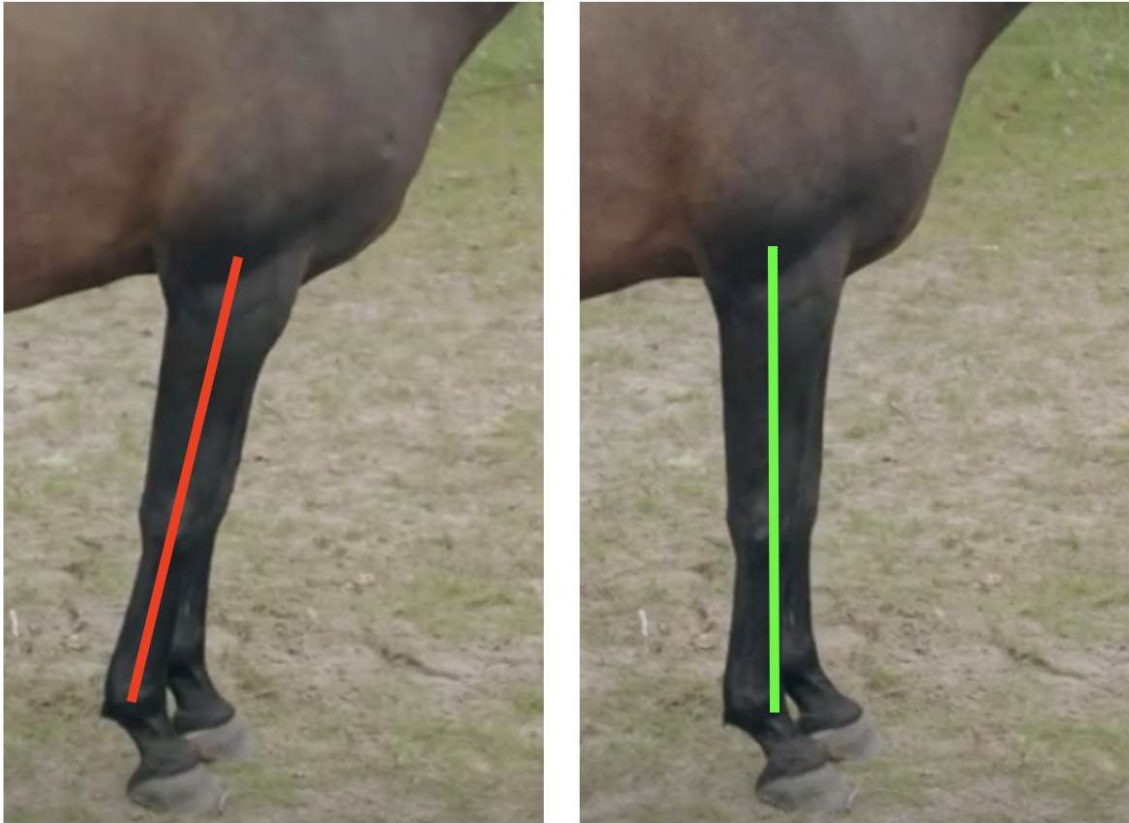
The thoracic sling muscles primarily consists of the *M. Serratus Ventralis* and is furthermore assisted by the pectoral muscles (4x).

The thoracic sling muscles of a horse are extremely important for self-carriage as a contraction of these muscles lift the trunk and withers between the shoulder blades. When a horse moves without proper contraction of its sling muscles, the horse's movement looks downhill and on the forehand.

Signs of underdevelopment or dysfunction of the thoracic sling include:

- Vertical & horizontal imbalance
- Movement on the forehand
- Base of the neck instable
- Rotations in the spine
- Mental stress

Learning how to engage you horse's thoracic sling to ensure optimal functionality is thus vital to ensure proper biomechanics as it will allow the horse the control it's balance.



STRAIGHTNESS

It is a common belief that crookedness of the horse comes from its hind limbs. However, in most horses, asymmetry in the development or use of the sling muscles plays an important part in crookedness.

There are two dimensions that need to be addressed when working on the thoracic sling:

- Vertical balance unilateral contraction
- Horizontal balance bilateral contraction

Vertical balance is already described in depth in Module 5 Theory as well as Basic Exercise #1. This is the first step of training the sling muscles as the horse needs to be able to lift and stabilize the ribcage when one of the front limbs is in flexion phase to develop the strength required to enhance straightness.

Horizontal balance is the next dimension towards optimal movement and describes the weight division between the horse's front- and hindlimbs. The average horse carries 58 percent of its weight on its front limbs and only 42 percent on its hind limbs. This way, the heavy chest is not out of the way for the hind limbs to step under. In nature, this is not so much of an issue. In fact, being on the forehand even provides an advantage:

- With most weight on the forehand, the horse only must push his weight forward while grazing to find a new patch of grass.



However, we must keep in mind that by nature, horses are not only grazers, but also browsers. Through this variation in feeding position, the primitive horses naturally train the thoracic sling muscles in a very dynamic way. Dissection research has shown that primitive horses have far more developed Serratus muscles than most domesticated horses (about 1/3 more developed). Therefore, Passive Physio is so important – for more information on this topic check Module 3. Management.

Thus, by nature, it is not a problem that the horse is slightly more on the forehand and they naturally adopt a dynamic posture through a balanced ratio of grazing versus browsing. The asymmetry does become a problem however when the horse is placed in a domesticated environment with limited dynamic stimulation and when athletic performance comes into play.

When the horse is asked to perform on angles / turns - an arena always has four corners – and potential rider weight is added, the additional forces on the forehand will then lead to overload which results in injury and premature wear and tear.

We must therefore evolve to become better trainers and learn to horse how to push upwards with its front limbs so that the horse will always carry at least a 50-50% ratio of total weight on both front and hind limbs. A bilateral contraction of the sling muscles is needed to raise the withers and base of the neck and lower the sacrum. This action improves the horizontal balance of the horse.



It is important to realize that when working on the thoracic sling the old credo of 'practise make perfect' is outdated. Instead, we should always strive to apply the more advanced concept of perfect practise as without it, the exercise will have no benefit and could even do harm when executed poorly.

Together, focusing on a dynamic interaction between vertical and horizontal balance will provide the sling muscles the resiliency to hold the ribcage centrally between the forelimbs, to support the base of the neck and to raise and elevate the chest.

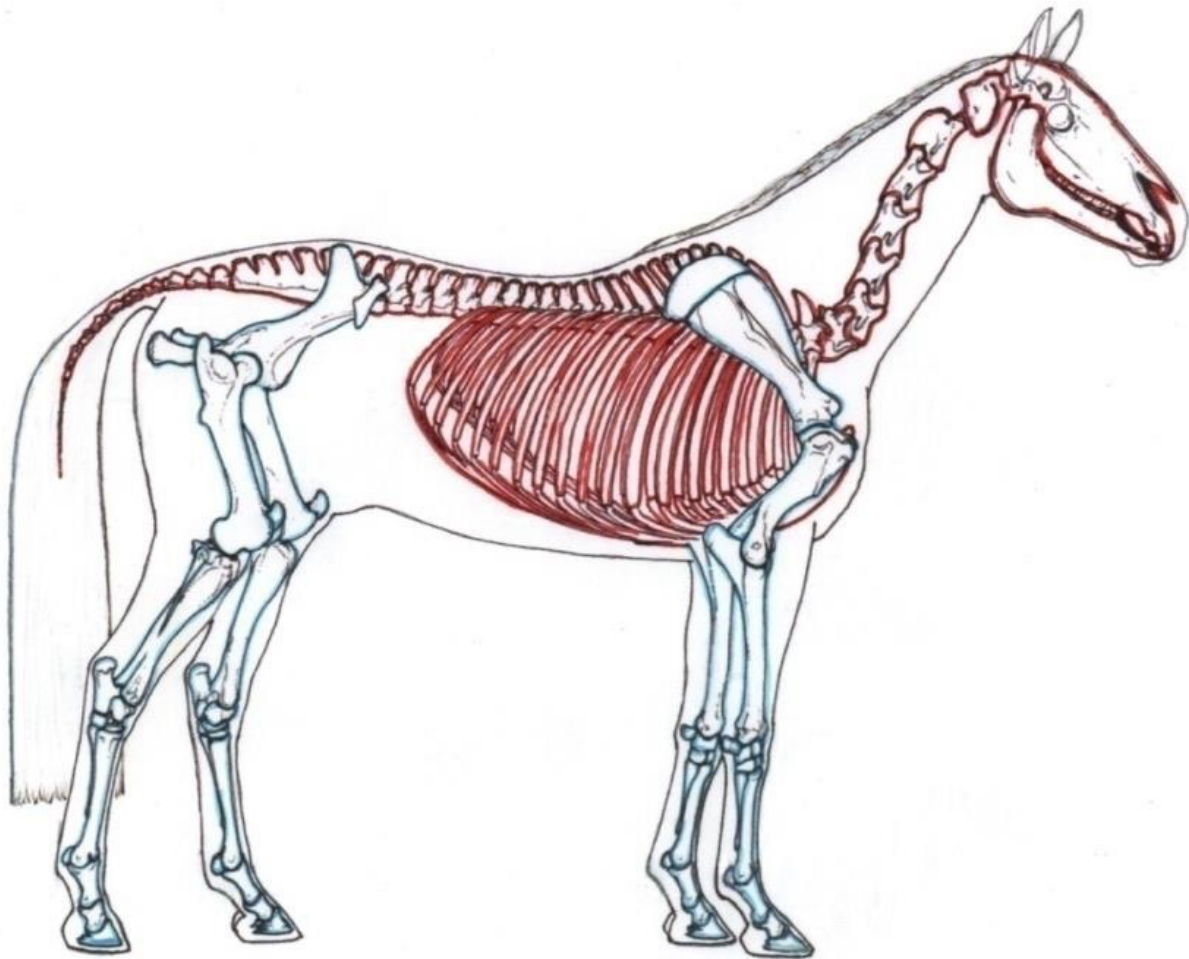
IT'S ALL ABOUT...THE FRONT LIMBS

I said it. I can hear your confusion from here: shouldn't it be hind limbs? Isn't that what we've all been taught? Sure is. No matter what discipline, the basis of all equine performance is the engagement of the hindlegs. Therefore, the point is not to question the need for hindlimb engagement, but instead to underline the fact that *“a fabulous hind leg is no good without an equally fabulous front limb.”*
– Clayton 2014

The limbs of any species are made up of a series of rigid bones which articulate at the moveable joints. The length of these bones combined with the angles of the joints determine the limb's ability to support weight and/or provide propulsion.

A strong, straight, and vertical skeletal structure is an excellent design for weight bearing, but not so good for athletic purposes. Think for example about heavy species such as an elephant. As their legs are quite upright, they act like supporting pillars, but are therefore not capable to create a moment of suspension and jump. Therefore, a small moat will contain them at a zoo.

On the other hand, lighter species such as a cat tend to have limbs with highly angled bones and compressed joints. This design allows for a great deal of athleticism and flexibility in which the limbs act as a propulsive lever but is less suited to bear weight.



The anatomy of the horse combines these two extremes: more straight legs in the front and more angled legs in the hind. During walk, the horse's limbs mainly act as levers pushing its body forward. At the trot, they act as strings. The canter combines both aspects:

“In inverted pendulum gaits like walk, the limbs act as rigid struts over which the body vaults. In the bouncing gaits like trot, the limbs act as a spring and the body center of mass moves like a bouncing ball. Equine gallop might have both a bouncing and pendulum aspect.”

- Liduin et al. 2004

In many training principles it is believed that the horse engages its hind limbs under its body propelling itself upward and forward. However, in reality, most of the upward (vertical) propelling forces are produced by the front limbs:

“In horses, and most other mammalian quadrupeds, 57% of the vertical impulse is applied through the thoracic limbs, and only 43% through the hind limbs” - Merkens et al, 1993

Measurements on limb bearing are done through the concept of Ground Reaction Force (GRF) as being the force which actually makes the horse move. When the horse's hoof makes contact on the ground, the limb automatically pushes against the ground. The GRF is the reaction of the ground pushing back to the hoof. The relative sizes and directions of the ground reaction forces affect the horse's balance. Because the front limbs bear more weight, the GRF is always higher on them.

By changing the angle of the GRL, the horse controls his speed and direction. To better understand the relationship between GRF and the roles of the limbs we can use the example of a jumping horse. At take-off, the hind limb forces cause the horse to rotate forward. At landing, the front limb forces cause the horse to rotate backward allowing the horse to shift back towards their center of mass and land on the hind limbs.

This clearly shows that the horse's body movement is a set of opposing forces. The hind limb propels the horse forward while the front limbs counteract that force from pushing the horse to fall forward by creating vertical forces to maintain an uphill balance. So the horizontal force (forward movement) from the hind legs has to be supported by the upward push of the front legs in order to remain in balance. In summary it can thus be said that:

- The hind limbs mostly produce horizontal forces (forwards movement)
- The front limbs need to direct those forces in a vertical incline against gravity (balance control)

Thus, in essence, balance control lies in the forehand of the horse. Therefore, engaging the thoracic sling is so important.

Does this mean working a horse from front to back instead of back to front? No not as the thoracic sling is about directing or converting forces produces in hind limbs and vertebral column. So, without horizontal forces (forward movement), there is nothing for the front end to direct or regulate.

That being said, when a front limb is too slow in take-off – i.e., it stays too long on the ground in the backwards phase – the hind limb will be limited in its capacity to step forwards as it is literally hitting a wall. The heavy chest must be up and out of the way timely enough for the hind limbs to able to step under. If the body vaults over the chest, this predisposes the horse to injuries and wear and tear.



Left: a horse dropped in the chest and base of the neck. Look at the negative diagonal advanced placement: the right front is still on the ground while the left hind is already off the ground. Is the left hind too early, the right hind stepping short or is the right front too late in take-off? That is the question we always need to ask. On the right: a more even diagonal. The thoracic sling is more engaged which results in a more supported base of the neck.

Thus, the art of training is the ability to manage opposing forces in a delicate way to allow the horse to achieve optimal balance.

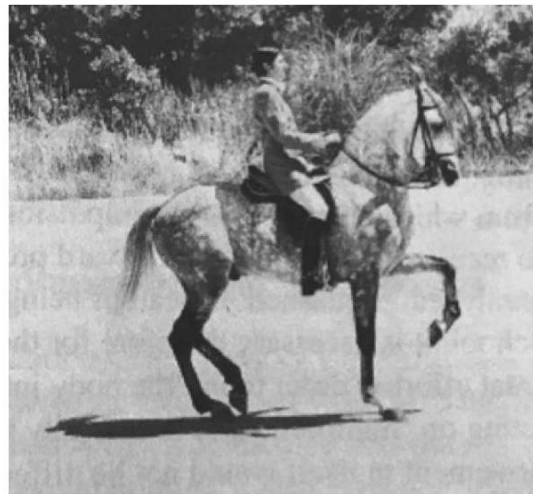
Engaging the thoracic sling is thus key to ensure correct biomechanics and promote overall healthy of the horse.



HISTORY

Historical literature doesn't provide any specific reference when it comes to the term thoracic sling. A simple explanation is that science greatly evolved. Therefore, the old masters simply didn't have the means to investigate the horse 'inside-out' to such an extent as we can today.

However, does this mean that the classical masters were completely unaware about the importance of an elevated chest? Of course not. They were all very much aware of the danger of overloading the front limbs and the importance of true collection.



La Guérinière already wrote:

"It must be noted that a horse, when moving, is naturally inclined to use the force of his loins, haunches, and hocks to thrust his entire body forward; and since his shoulders and forearms are being used to support this action, the horse is, out of necessity, on his shoulders and, consequently, heavy in the hand. To place a horse on his haunches and cure him of the fault of being on his shoulders, horsemen have found a cure in the lessons of the halt, the half-halt, and the rein back."

A bit later on in history, **Steinbrecht** confirmed these findings by writing:

"As noted before, the hindquarters are stronger by nature than the forehand, not only simply because they have stronger bones, joints, and muscles, but also indirectly because their joints, like compression springs, are able to bend under a heavy load. The forelegs do not have this property and must therefore be carefully protected against any sudden, heavy stresses as they occur in poorly performed turns and halts. It is therefore the desire of all riders who espouse a balanced carriage whether they understand it or not to bring their horses onto their haunches and relieve them in front. How ignorantly this is generally done and how frequently the work is completely contrary to the nature of the horse is evident from the many broken-down creatures that are victims of dressage training."

He then continues to say that the:

“hind legs can be made flexible only by stressing them, there is no other way for the rider. To bend them more, he must load them more, and the weight requires for this purpose can only come from the forehand. By temporarily directing the weights of the forehand toward the rear, that is, closer to the center of gravity of the horse, so he is able to act in a downward pressing lever-like manner on the dorsal and lumbar vertebrae and transfer this action to the hind legs if he brings them sufficiently forward (...)

I have had horses whose front legs were completely worn out, but whom nature had endowed with strong hindquarters, and I have given them such complete freedom in the shoulder and such reliable gaits by bending their haunches that they could compete with the best and most valuable of their species. Under former riders, their strong hindquarters had merely helped to push all of the weight toward the forehand with great force, with such overloading ruining the forelegs in a short time. By taking the load from the forehand, these horses gradually regained their natural elasticity and agility. The higher elevation of the neck also gave them increased action from the shoulders.”

So there is plenty indication in classical literature that the old masters were very aware of the importance of the horses front end. However, the way to alleviate the front limbs greatly differed. **Guérinière** used the halt, half-halts and rein back combined with lateral work and collection. **Nuno Oliveira** also is a big fan of correct halts stating that the transition from *“trot to the halt and halt tot o trot is one of the keystones of good dressage, and makes the horse properly collected.”* He often used the transitions from school trot to halt for correcting a faulty piaffe in which the horse places his front limbs too far under him.

The controversial french riding master **Francois Baucher** and his followers used a set of flexions to alleviate and supple the forehead. He also is responsible for developing the ‘Lifting of the Hand’ designed to ride the horse onto the bit or into elevation. Any lifting of the hand always has the effect that the bit pressure moves away from the tongue onto the corners of the lip. In an equestrian world that unambiguously cherishes the deep hand position for a long time, it is understandable that the picture of a rider raising his hands causes confusion right up to rejection as it contradicts with one's own equestrian principles.

The lifting of both hands causes the horse to lift up its thoracic sling, support and round the base of the neck and seek a forward-downwards contract – telescoping ability after which the hands are immediatly lowered again with the horse.

So, in summary, even though our understanding of the thoracic sling is different due to advancements in science, the principle of elevating the horse's forehead so that the front limbs can correctly produce vertical impulses against gravity has always had great priority without those seeking true balance and lightness.

Today, it is our job to not blindly repeat the old masters and holding unto tradition, but to evolve through the light of new knowledge that modern day science is able to provide. The words of **Colonel Danloux**(1931):

“Respect for tradition should not prevent the love of progress.”

A true trainer thus learns how the body of the horse works and questions old theories considering new knowledge so that one can evolve for the horse's sake.

ESSENCE

The essence of the sling lift includes:

- Balance & posture control
- Stabilizing base of the neck
- Coordination of forces
- Optimal tensegrity

A specific mention needs to be made that most domesticated horses today lack the Nuchal Ligament Lamelle attachment on C6-C7. As such, the base of the lower neck is less stabilized than often assumed. When the thoracic sling engages properly, it can support the lower neck from below, providing more stability and allowing the neck to telescope.



PREPARATION

Before you get started with the sling lift, you will need to have mastered the following preparatory exercises:

- The Square / Rectangle
- Lateral flexion of the jaw
- The Circle (sometimes)

Basic vertical balance and lateral flexion is a requirement for each horse. Some horses need the suppleness of the circle first to be able to execute this exercise properly. This varies a bit from horse to horse. Thus, keep observing your horse closely and if you notice this exercise is difficult and the horse braces, you might want to have a try for some circles first.

Furthermore, there are 2 mobilizations which can help to release possible tension and prepare the horse for success:

- The sternum rock
- The base wrap
- The sling wrap

For the first mobilization, place one hand on the front part of your horse's sternum (manubrium) and one hand down the belly towards its end (no further than xiphoid cartilage). Take a deep breath and slowly invite the horse to a rock as if you are "cradling a baby". Repeat a couple of times or until the horse relaxes into it.

For the second mobilization, apply a base wrap. Then, make soft upwards half halts. Hold it for about 2-5 seconds before releasing. Repeat a couple of times or until the horse relaxes into it.

For the third mobilization, apply a wrap diagonal from the elbow to the superficial pectorals. Then, make a soft upwards half hold. Hold it for about 2-5 seconds before releasing. Repeat a couple of times or until the horse relaxes into it.



STEP-BY-STEP PROCESS

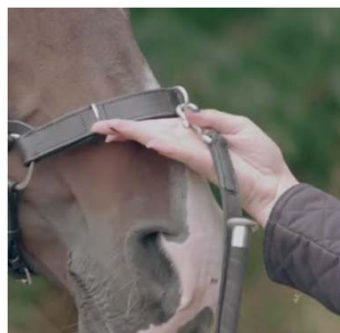
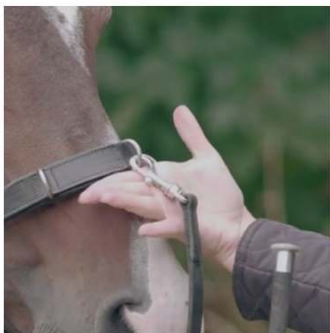
The basic aids include:

- Inner intention
- body posture
- Secondary rein
- Secondary whip

GROUNDWORK – ONE REIN (CAVESSON)

1. Warm up your horse in movement first for at least 5 minutes.
2. Halt your horse in basic vertical balance and stand in backwards position yourself facing the horse. If your horse is too fidgety in the standstill, then try the exercise within movement instead. Remember, standstill is always just for teaching, not for applying. Check the following:
 - If the front limbs are in a backwards or leaning position that's fine. Don't try to square up the legs mechanically. This will come as a natural result of the exercise.
 - If the front limbs are forwards in a bracing position go back to movement first before trying a halt again.
 - Check the lateral flexion of the jaw. It must be in place before asking the sling lift as otherwise the horse can't do what you ask of it. There should be zero tension in the jaw.

- Check the neck carriage. The neck should be in a neutral position. If it is too low, the Supraspinous ligament will pull the sacrum in extension. If it is too high, the jaw will be restricted. Strive for a nice long and horizontal neck. If the horse can't give you this in standstill, only continue within movement.
3. Position your hand. In the beginning you can keep your hand close to the cavesson noseband without holding it:
- You can use a flat hand to support if needed. Make sure your hand is turned towards the inside of the nasal bone to avoid bracing
 - If your horse doesn't like you this close, then just hold the rein. Make sure if you do so that you keep your hand slightly to the inside
 - Imaging connection yourself to a dance partner – determined but soft



4. From there, have a strong inner picture of what you're about to ask and position your body in the proper coordination suited for the exercise.

Imagine a dance where you are the leading partner:

- Straighten your shoulders and belly button upwards.
- Position your legs correctly. In the beginning, one leg forward and one leg backwards usually helps best to travel energy through the body.
- When asking the lift, lean slightly towards the ball of your feet while staying aligned in the your spine. Keep your pelvis balanced and open as otherwise the horse will push against you. When asking the horse to shift the weight forward lean a bit more toward the heel of your feet.
- You can use an assisting whip aid to the sling muscles directly or towards the hindquarter to enlarge your energy bubble a bit when necessary.



5. Gradually increase the distance on the cavesson rein to see increase the connection when possible.
6. Enjoy the process and do not tire the horse. This is not something you should endlessly repeat but just apply every now and then to check connection, throughness and balance. Remember: teach it in standstill, but then apply it in movement!

WORK IN HAND – TWO REINS (CAVESSON OR BRIDLE)

1. Position your horse the same way as explained in the groundwork section. However, instead of facing the horse standing backwards, you are now positioned next to your horse's shoulder facing forward.
2. Double check that you are holding the reins slightly above the bit or cavesson noseband to avoid any downwards pressure and create a drawrein effect.
3. From there, have a strong inner picture of what you're about to ask and position your body in the proper coordination suited for the exercise:
 - Straighten your shoulders and belly button upwards.

- Position your limbs balanced. Make sure you are properly grounded.
- Opposite to the groundwork, when asking the lift, lean a bit more towards the heel of your feet while staying stabilized in your pelvis and aligned in your spine. So, keep your pelvis balanced as otherwise the horse will push against you. When asking the horse to move forward just take a balanced step forward connecting all the surface of your foot to the ground.
- Lift the reins slightly in an upwards action: like a half halt. Makes sure it is a lifting action and not a backwards action.
- You can use an assisting whip aid to enlarge your energy bubble a bit if needed. To do this in work in hand, it is easiest to take the reins in one hand instead and point the whip towards the horse's haunches or tail.



4. Enjoy the process and do not tire the horse. This is not something you should endlessly repeat but just apply every now and then to check connection, throughness and balance. Remember: teach it in standstill, but then apply it in movement!

RIDING – TWO REINS (CAVESSON OR BRIDLE)

1. Apply the same body coordination in your upper body: belly button up and shoulders straight. Make sure to stay vertically balanced over your seatbones.
2. Use the same technique on the reins – a lifting half halt – as described in the work in hand section.
3. Use the **Baucher** principle of *‘hands without leg, leg without hands.’* You can tuck under your own pelvis a bit more but make sure to not ‘drive’ the horse towards your hands. In the words of **La Guérinière**:

‘If a horse leans too heavily on the hand the half-halts must be more frequent and only indicated by the bridle hand without any aid from the inner thigh or the legs; rather it is necessary to loosen the thighs or else he would throw himself on the forehand to an even greater degree.’

4. You can assist with a whip aid directed towards the tail or croup if needed. To do so correctly, it would again be best to take the reins in one hand.
5. If the horse follows the aid, to not drive its weight forward, but instead initiate movement from this engaged position with the lower leg so that the horse is more able to start movement from the hind limbs instead of ‘throwing’ itself on the chest in the transitions.
6. Enjoy the process and do not tire the horse. This is not something you should endlessly repeat but just apply every now and then to check connection, throughness and balance. Remember: teach it in standstill, but then apply it in movement!

CHALLENGES & TROUBLESHOOTING

1. Lifting of the head

The objective is to engage the thoracic sling and not to lift the horses head as this is counterproductive to the essence. If this happens, release your aid immediately and go into forward movement before returning to the exercise.

Also check your aids:

- Don't pull the rein or hand upwards to the horse's face
- Do more with your energy and apply less mechanical aids
- Less pressure and more release – be content with little



2. Bracing the jaw

If the jaw is bracing you will have to work on this first prior to returning your focus on the thoracic sling. Go back to movement and work on your alignment there before returning to this exercise.

3. Head too low

If the head is too low – that means ears at least a hand below the withers – the horse won't be able to engage its thoracic sling due to the extra weight of the head/neck and extension induced in the sacrum. Again, go back to movement first and as soon as the horse has a more horizontal head carriage, return to the exercise.

4. The horse is resting on a limb or stepping backwards

This way, the horse is pushing the weight “out” and this is counterproductive to the exercise. In the halt, the horse should always be “ready to go forward again.” So, we want to keep energy within the body. A good halt comes from good movement so make sure that the movement prior to the halt was correct and sufficiently energetic. From there, check the following:

- Go back to movement first
- Ask less – be content with little
- Reward more: pick the right moments
- Direct energy upwards – not backwards
- Keep it dynamic: only ask once or twice



Give the horse some time to figure it out. If the circumstances are right and the communication clear, every horse will be able to perform the exercise in due time.

5. Fatigue

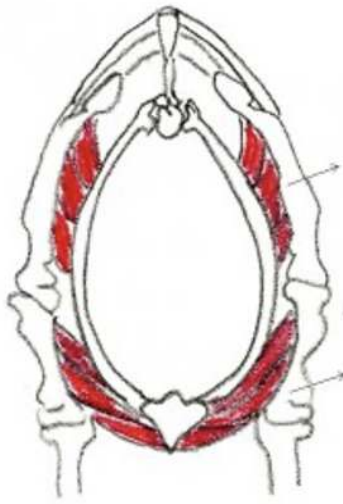
This is not an exercise you should repeat over and over. Keep it dynamic and only repeat when necessary. So don't tire the horse too much and enjoy the process.

WHAT'S NEXT?

When the horse can give you a nice sling lift, you can continue with the following exercises and concepts:

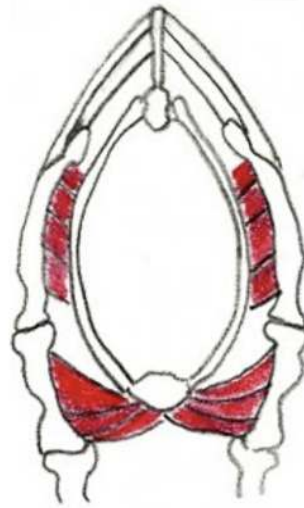
- Lateral exercises
- Transitions
- Collection

Manual - Basic Exercise #3



Serratus ventralis thoracis muscle

Pectoral Muscles



Contraction of sling muscles

raising of the horse's withers



A close-up photograph of a person's hand holding a green resistance band. The hand is positioned at the top of the frame, gripping the band. The band is a vibrant green color and is held taut, extending downwards. The background is a dark, solid color, possibly black or dark grey. The person is wearing a dark grey long-sleeved shirt. The lighting is soft, highlighting the texture of the band and the skin of the hand.

Basic Exercise #3
GOOD LUCK!