



# Classical Horse Training

*Combining art with science to achieve balance and harmony*



## OPENING THE JAW

*'An essential exercise to create long lasting postural change'*

***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 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 light bulb moments diving into these materials.

## **Copyrights**

Please take note that the content of this manual is copyrighted by Thirza Hendriks. It is strictly forbidden to change or publish this document online or distribute to third parties without the explicit written consent of Thirza Hendriks herself.

## **Disclaimer**

This document has been compiled with great care to ensure the accuracy of the information. This document is part of Classical 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**

The jaw is part of the horse's stomatognathic system which consists of the skull, jaw, hyoid apparatus, first two cervical vertebrae, TMJ and the sternum, all located in the axial part of the skeleton.

The jaw is one of the strongest and heaviest bones in the horse's body. A horse has an upper jaw which is called the maxilla and a lower jaw which is called the mandible. At birth, the bone consists of left and right halves that joint at a cartilaginous centre. These bones fuse together when the horse is between 2-3 months of age. The maxilla and mandible contact each other through the teeth. Together, the jaw is primarily concerned with chewing food and therefore essential to ensure the horse's survival.

Apart from mastication and digestion, the jaw – together with the other parts of the stomatognathic system – also plays an important role for overall balance and neurology. The jaw and its structures are intimately connected to the neurological system through the

dura mater affecting the horse's proprioception.

Furthermore, the jaw has a lot of mechanical connection all the way to the hind making it very important for correct movement. The exact connections will be explained more in detail in the section 'relevant structures'.

Finally, the jaw also play a role on emotional levels. A lot of emotions such as anger, stress, peace and calmness are reflected in mandible movement.

All things considered, the jaw is thus very important for good biomechanics. If there are tensions in the jaw, it affects the entire performance of the horse and makes other exercises useless. Energy can't flow from the hind to the riders hand if it gets blocked at the jaw. A lack of mobility is always linked with the absence of lightness.

Therefore, the opening and releasing tensions of the jaw is an absolute basic when it comes to training as it provides the first key for proper lateral bending. Opening of the jaw starts with a soft lateral flexion. A horse can have lateral flexion without bending, but it cannot have bending with lateral flexion.

However, it should be noted that this exercise is only meant as temporary. As some stage, the horse should always have an open and relaxed jaw on its own. Repeating it too much has the risk of over flexing the jaw compared to the other body parts and thus making the horse actually less stable or too flexible. Therefore, you need to know when to apply and when to advance to other exercises.

The exercise can be done in all gaits at any lines. I usually start in the halt, but horses that are very unstable / lack balance it is usually easier in movement as I will explain later.

## STRAIGHTNESS

Horses predominantly chew on one side. As a result, the muscles of the jaw and sometimes even the bone itself are often asymmetrically developed to some extent. An assessment allows you to observe which side is more dominant for your horse. This asymmetry often results in common issues such as uneven rein contact, tilting of the head, taking the bit, asymmetry in the hind limbs, heavy on the forehand and misalignment in the spine.

The way our horses graze might also contribute to jaw asymmetry. A horse that grazes drops the lower jaw forward. If it browses, the lower jaw draws back. One sided actions could lead

to under/over bite of the jaw.

Furthermore, there are direct mechanical connection from the jaw to the hind limb [see relevant structures]. Therefore, it has a direct impact on the pushing and carrying abilities of the hind limbs. The interaction works both ways. So a horse with a tight jaw will never reach true collection whereas problems or asymmetry in the hind limbs will always show the jaw area of the horse.

To straighten the horse, always repeat the exercise slightly more to the difficult side but never forget to train the easy side was well.



Left: crooked jaw. Right: same jaw after one year of correct rehabilitation training

## HISTORY

The opening of the jaw has always been a somewhat disputed and heated topic in classical literature. Many different techniques have been developed to flex and/or relax the horses jaw. Most of them focus on the acceptance of the bit.

**Francois Baucher** is probably most commonly known for his jaw flexions that were designed to supple the horse's head and neck: *"The importance of these flexions of the jaw is easily understood. The result of them is to prepare the horse to yield instantly to the lightest pressure of the bit, and to supple directly the muscles that joint the head to the neck. As the*

*head ought to precede and determine the different attitudes of the neck, it is indispensable that the later part be always in subjection to the other, and responds to its impulsions (...) In order to execute the flexion to the right, the man will take hold of the right curb-rein with the right hand, at about six inches from the branch of the bit, and the left rein with the left hand, at only three inches from the left branch. He will then draw his right hand towards his body, pushing out his left hand so as to turn the bit in the horse's mouth. The force employed ought to be entirely determined by and proportioned to the resistance of the jaw and neck only (...) as soon as the flexion is obtained, the left hand will let left rein slip to the same length as the right, then drawing the two reins equally will bring the head near to the breast, in order to hold it here oblique and perpendicular, until it sustain itself without assistance in this position. The horse by champing the bit will show his being in hand as well as his perfect submission. The man, to reward him, will cease drawing on the reins immediately, and after some seconds will allow him to resume his natural position."*

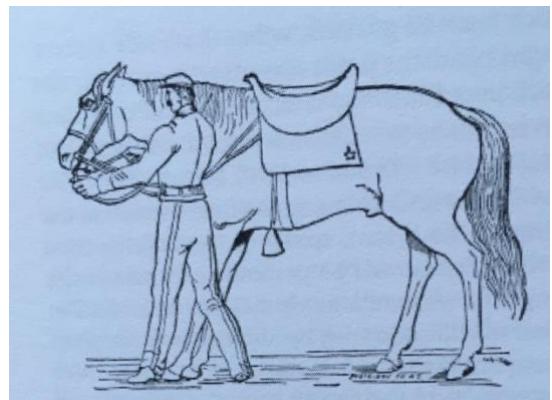


Fig. 1

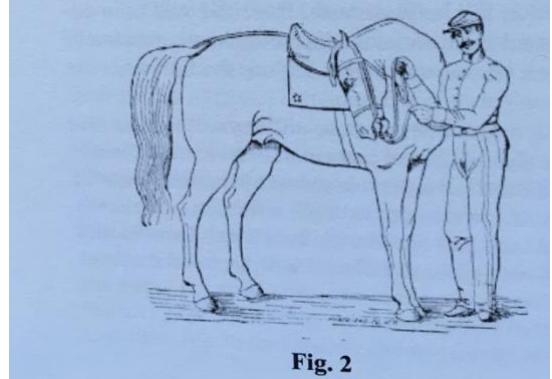


Fig. 2

This way of doing flexions is much different to the exercise explained in this manual. However, it is important to share as you might come across this practise. The practise of these flexions has always been subject to a heated discussion with **Gustav Steinbrecht** and its followers as its main opponent: "Mr. Baucher's system, the best scarecrow among all the errors and faults in our art, again provides the most convincing proof in this respect. He work his horses in place to get them as soft as a washrag and thus takes away all their desire to move forward. I warn my readers seriously against making long and tiring exercise of bending in place."

So basically, Steinbrecht's main criticism was that the [excessive] use of jaw flexions made the horse too soft and flexible in that area and thus unstable: "Once such a fault has taken root, it can often be eliminated only with the greatest difficulty since it is much easier to bend and inflexible part than to make a part that is too soft steady and taught."

In later times, **Nuno Oliveira** would not agree with this criticism “*The criticisms of Baucher's flexions, particularly those of the contemporary German school, are erroneous. They are the result of a different conception of lightness.*”

He says that when executed correctly, they can provide useful for those horses needing them: “*Flexions done while dismounted are useful to conquer resistances, or, I should say contractions of the jaw. If well done, flexions of the jaw are a very precious aid during training of the horse. But it must also be said that they are beneficial only when practised by a skilled rider who is accustomed to doing them (...) [However] Not all horses need the gymnastic exercise of jaw flexions. It is a waste of time to ask a horse who is well balanced, who has a good lower neck position and a soft mouth to do them. It is enough to mount such a horse judiciously and methodically while working him gymnastically.*”

So in short, he feels they can be useful for those horses showing tension or resistance, but not needed for those who are not – which makes sense. I think Mr. Oliveira was very lucky to come across plenty of those well-trained and natural talented horses who didn't need them. Unfortunately, today's experience seems to differ to that extent. It seems many horses have a problem accepting the bit as it was never taught to them properly. For those horses, I feel these type of flexions are an absolute basic to restore a problem. However, I'd like to prevent problems. This can be done through lateral flexion taught by the cavesson as presented in the video<sup>1</sup>. This way, the horse learns to already open its jaw that by the time you want to ride with a bit – if you want at all – the horse already knows how to open its jaw by itself. The essence behind is more therapeutically instead of a mechanical necessity for training purposes.

Apart from the jaw flexions, another common technique used to flex the horse's jaw and poll was the so-called ‘breaking off’ in which the horse is mounted and then bend to the left and to the right. **Steinbrecht** warned against this practise by stating that: “*In the mobility of its seven cerebral vertebra and its lower jaw, the horse has eight means available to avoid the correct flexion of its poll and, when standing still, where it also has the secure support of its four legs, it is quite skill full in using them (...) Just like a human being, who has a stiff or painful neck, will not turn his head but his entire body to see to the side or rear, the clumsy, green horse will also always tend in these exercise to make things easier for itself by escaping with its hindquarters toward the opposite side.*”

Steinbrecht observed that by using this technique, the horse will have the tendency to lean to the outside and drift out with the hindquarters. In the standstill, it is much easier for the horse to divide its weight uneven than in movement: “*For example, at the trot, where it*

---

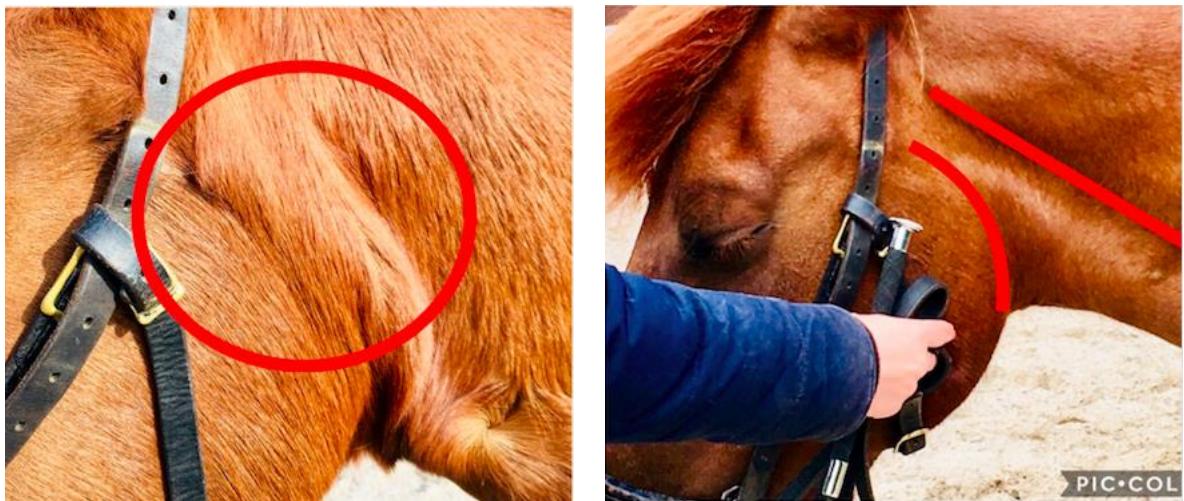
<sup>1</sup> For an example of the jaw flexions with the bit please refer to the manual & video about the aids

*must balance itself on alternating two legs is thus forced to keep its body more in balance in any case.” So therefore, he actually advised then when you would do flexions of any kind, to do them in movement first: “The gradually obtained flexion when moving is instead the preparation for exercise in place in that the correct bending in place is always an advanced task for the horse and can be used as a test for its obedience to the hands and legs. Its thrust also produces a certain tensions in its muscles and skeleton so that it is not easy for the bent portions to yield too much by bending the wrong way. Finally, movement serves the rider as the only reliable measure to determine whether his work is correct, in that it either gives him confirmation by its liveliness and its regular rhythm, or, if these characteristics are absent, it advises him not to continue with the work.”*

This is valuable advice as also today most horses find standstill exercises very difficult. However, we have to keep in mind that Steinbrecht writes from the perspective of a ridden horse – not on the ground and with the ultimate goal in mind to create acceptance of the curb bit. However, to do so, Steinbrecht recognizes the superiority of starting with the cavesson first: “*When work is done on the horse’s forehand, and particularly its poll, the horse may develop great difficulties by escaping with its tongue and lower jaw. Only if these part of the horse’s mouth are in a quiet position, can the bit lie securely and uniformly on both bars and exert its unweakened effects. By taking back or shifting the lower jaw to the right or left, the horse appears to yield to the pull of the bending rein, but the actions gets stuck in the stiffer parts and is thus cancelled out. The old masters in their practical thoroughness prevented this fault by using a cavesson (...) which, because it acts only on the nose bone, makes escape and displacement of the lower jaw impossible during breaking off and bending, thus giving these horses entirely proper positions.*”

So he advises that when you do any flexions of the jaw or poll, do it with the cavesson first. From there, he stresses some biomechanical difficulties that you might run into and that you also have to take into account: “*The lateral flexion of the head may be made more difficult by a short, thick neck and by a thick, fleshy throat-latch, but such impediments can always be overcome by diligent and patient exercises to the extent that they will adversely affect the influence of the hindquarters, that is, collection. Yet, they will always have a disadvantageous influence on the agility of the horse during turns (...) The soft portions that sometimes make lateral flexion more difficult also include the parotid glands. This tender and sensitive part can easily be bruised and compressed by the lower jaw during lateral bending and the resulting pain often stimulates young horses into obstinate resistance and disobedience (...) At the beginning of training the gland is pushed outward to escape the pressure and is then clearly visible. However, when during the course of work the fat later disappears and the muscles become more ductile to provide more space for the gland, it will usually be retracted into the interior where during bending it can be accommodated*

*underneath the edge of the jaw. Only then is the work on the throat-latch completed because only then does the activity of the parotid glands experience no interference and the influx of saliva will not be impeded during bending.”*



PIC•COL

However, from all of his observations, Steinbrecht doesn't describe a preferred technique to open the jaw – apart from stating that he would generally prefer movement over standstill. So for this, we might have to go back to the older masters he refers to and then we end up with **La Guérinière** who wrote: “*When working with the manège horse, the inside rein should be held a little shorter in the bridle hand. This places the horse's head to the side toward which he is moving (..) but the inner rein must never be too short; that would give a false bend and uneven contact.*”

So this technique – even though written from a ridden perspective – might resemble most to the technique presented in this manual and video. So by now, it should be clear again that we should not always follow literally what was advised by the classical masters. We now have much more science available to understand the horse in a better way which lead us to evolve so we can become better trainers to our horses and enhance efficiency through a soft way. When Steinbrecht couldn't work out softness of the jaw, poll or neck he advised artificial solutions instead: “*In the fight against the superior physical force of the horse, the rider should always take refuge in suitable auxiliary resources, such as a martingale, side reins, and preliminary work on the lunge in a cavesson.*” By now we have the knowledge to target resistance much more effective by knowing more precisely how the body is interconnected and that we don't need any draw reins to achieve lightness. So from that, always remember that our love for tradition should not prevent the necessity of progress.

## PREPARATION

Opening of the jaw is one of the first keys to straightness, self-carriage and lightness and therefore, does not require any prior preparation apart from basic horsemanship and a good relationship with your horse.

## COMBINATIONS

As mentioned before, lateral flexion opens a doorway for proper later bending so from there, it can be combined and should always be present in any other exercises.

## STEP-BY-STEP PROCESS

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

### GROUNDWORK – ONE REIN (CAVESSON)

1. Ask the horse to stand as straight as possible without any bending in the neck.
2. Either stand next or in front of your horse. In the beginning, it is easiest to stand next to the horse so you can ask it to come around you.



3. You can keep your free hand in the area of the first two cervical vertebrae as a checking mechanism:
  - If the horse perform the exercise well you should feel it moving away from you checking hand.
  - If the horse tilts, you will feel more pressure coming into the hand.
4. Ask for a slight lateral flexion with a directional rein aid. In the beginning, keep close to the cavesson without having your fingers under it – as this might cause you to lose it.
5. Gently wiggle if needed. Be careful to do this very softly in small vibrations. Too much movement will have the opposite effect and result in bracing instead.
6. Release as soon as the horse yield, but be careful that the horse doesn't 'shoot' back like an elastic. So softly release and it is up to the horse to keep the position or to go back to neutral.
7. Enjoy the process and don't tire the horse too much😊



#### **WORK IN HAND – TWO REINS (CAVESSON OR BRIDLE)**

1. Position the horse as described in the groundwork. Position yourself to the inside next to the horse. Keep the outside rein really soft to make sure it is not restricting.
2. Ask for a slight lateral flexion with a direct inside rein. Initiate the movement from your shoulders so that the inside rein automatically has the right action: inwards and backwards compared to the outside rein.
3. Slightly vibrate with your wrist if needed without moving your hand from position.
4. If the yield is correct, you should feel the horse coming closer to the outside rein while getting softer on the inside because of the concavity.
5. Release by closing the rein more towards the horse's neck – not against – and giving it forward in the movement of the horse – never just completely drop – to avoid that the horse 'shoot's back as an elastic.

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

### **RIDING – TWO REINS (CAVESSON OR BRIDLE)**

1. See as described in the work in hand as the process is exactly the same with the only variable of the seat.
2. Remain neutral in your seat. Remember, it is not about bending

## **CHALLENGES & TROUBLESHOOTING**

### **1. Bracing**

As mentioned, the jaw is a very emotionally invested bone so some horses can get very personal when it comes to releasing tension. If this happens, just release and try again and make sure to not go farther than the horse is willing to go. If you are too big in your aids, the horse might also brace. In this case, soften your aids to smaller movements. Really look for the signs of the horse. If it is blinking, stop the vibration for a second and then softly continue in a very small range of motion. Finally, moving also helps. Standstill exercises require a lot of focus for the horse so some horses simply prefer to stay moving and come back to it every now and then when needed.

### **2. Twisting / Tilting**

This is often caused by too much or too long pressure but can also be caused by the restriction of the horse. First, double check your aids and minimize pressure while releasing longer. From there, see how far the horse can go without twisting or tilting. Sometimes, in the beginning the horse can only go 2mm correctly before going into a tilt or twist. If that is it, then that is just it. So accept that reality and just build up until the horse is ready to release all the way.

### **3. Fatigue**

This exercise is not meant to keep doing for a couple of times. At some point the lateral flexion should just be ‘there’ whenever you start training after which you only might have to remind the horse every now and then. So there is no point to keep asking this. So in the beginning you can ask it once or twice and then go back to movement. When it is good, you don’t have to repeat or you can see if you can correct it in the movement. When the horse loses it you can go back again. So always stay dynamic to what the horse needs but never start your training by doing this exercise in a repetitive way. It is not about practise makes perfect but about perfect practise!

## RELEVANT STRUCTURES

### BONEY STRUCTURES

#### TEMPORO-MANDIBULAR JOINT (TMJ)

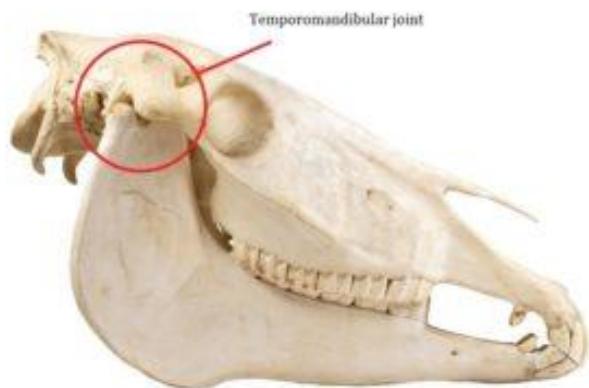
The TMJ joint is a synovial joint located just below and in front of the base of the ears and articulates between the *condylar process of the mandible* and the *zygomatic process of the temporal bone* as well as with the *hyoid bone*.

Although it technically is a joint, the ends of the bones (articular surfaces) are covered by fibrocartilage instead of hyaline cartilage, which sometimes can make it react a little differently than other joints.

The joint is separated by a fibro cartilaginous disc into a larger dorsal (upper) sliding joint called the *disco temporal* joint and a smaller ventral (lower) hinge joint called the *disco mandibular* joint.

The TMJ mechanism relies on associative tissue such as muscles, ligaments and tendons to function. The most important muscles for TMJ function are the *Masseter*, *Temporalis* and *Pterygoid* muscles.

Being part of the stomatognathic system, the TMJ is involved in mastication and also plays an important roll in balance and proprioception. Anatomically speaking, it is the closest joint to in the horse's body to the brain and brainstem and it is highly innervated and surrounded by structures that dictate balance and equilibrium. Furthermore, connections through the *Duramater* run all the way from the cervical vertebrae to the sacrum and pelvis. It is therefore, that any TMJ dysfunction often shows a reciprocal pattern affecting pelvic movement and the sacrum. Furthermore, fascial lines throughout the body also connect the TMJ all the way to hind legs. Because of these broad interconnections, TMJ dysfunction could also be caused by other underlying problems somewhere else in the body such as dental issues, ulcers, neck arthritis, lameness, primary pelvic problems and others.



Due to its location, The TMJ is quite easy to palpate as explained in the video. Furthermore, you could observe your horse chewing and look for symmetry from side to side. Does the jaw move to both sides? Is the head straight or is there a tilt? Furthermore, in standstill you can observe symmetry in ears, eyes and nostrils as well as the prominence of the TMJ or the facial crest. Opening your horse's mouth, you can also look to the incisor pattern as they directly influence the TMJ. The incisors should be aligned top to bottom. Observe whether this is the case or whether they are off centre, display an over/under bite. Finally, you can palpate the muscles mentioned for any (a)symmetry to get a better understanding of your horse's TMJ function.

Signs of TMJ dysfunction are broad. Discomfort may appear as head tossing/shaking and/or tilting, resisting the bridle, head shy, sticking tongue out, performance issues, chewing problems.

### **HYOID APPARATUS**

Function(s): It supports the weight of the tongue and provides attachment points for muscles and ligaments of the tongue, pharynx, neck and sternum. It is also involved in the horse's senses of taste, hearing and balance.

Notes: The hyoid apparatus consists of 5 bones, namely the *Stylohyoid*, *Epihyoid*, *Ceratohyoid*, *Thyrohyoid* and the central *Basihyoid* bone (unpaired). It is located between the mandibula and connects to the skull's styloid process, the larynx and lingual process to the base of the tongue.

It is a very delicate structure which can easily get damaged with serious consequences. Due to its interconnections all the way to the hind end it is a very important structure to consider for any type of training. Horses with problems in the hyoid will often show closed/swollen parotid glands to some extent.



### **FASCIA**

Fascia is a multidimensional connective sheet like 'tissue' beneath the skin that wraps around all muscles, tendons, ligaments, organs, blood vessels, nerves and links into the periosteum of the bone. It forms a dynamic and static 'spiders web' that defines and influences the entire body. Fascial restrictions can have far reaching effects such as compromised nerves and blood vessels and impeding joint function.

For the purpose of this exercise, it is important to understand how fascial chains connect

the jaw and hyoid to the shoulder, front legs and hind leg actions.

### **SUBSCAPULAR FASICA**

As the name suggests, it is located under the shoulder blade of the horse. The *Omohyoid* muscle originates from the subscapular fascia. When it is tightened or 'dried' out fascia lines will start to appear from the outside.

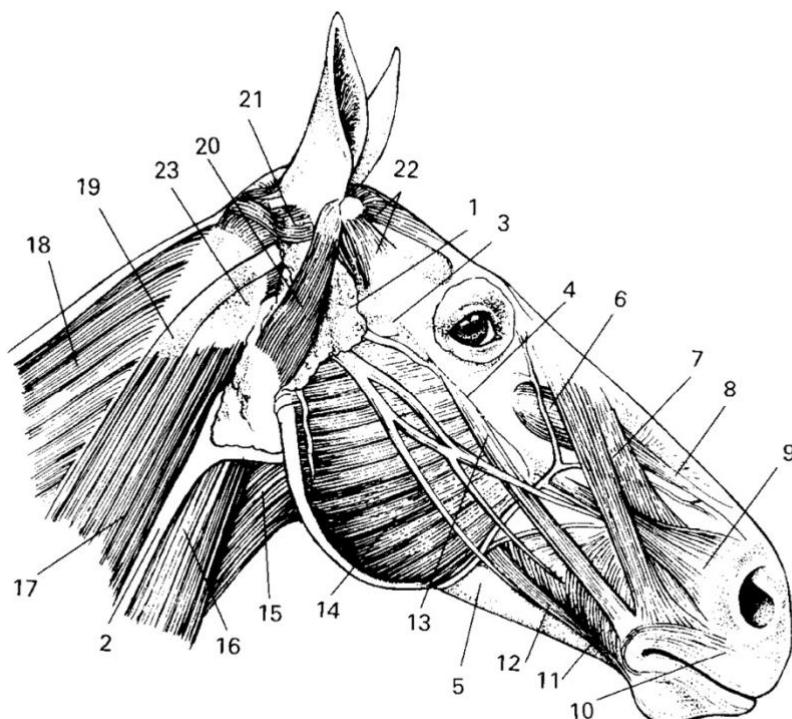
### **THORACOLUMBAR FASCIA**

Muscles that originate from the thoracolumbar fascia are *Serratus Dorsalis* (caudal and cranial), *Iliocostalis*, *Latissimus Dorsi*, *Transverse Abdominal* and the *External Oblique*.

### **FEMORAL FASCIA**

The *External Oblique* originates from the femoral fascia.

## **MUSCLES**



### **MASSETER**

**Function(s):** Bilateral contraction: Bringing the jaw together

Unilateral contraction: Moving the mandible sideways

**Origins(s):** Zygomatic arch (under the eye), facial crest and the TMJ

**Insertion(s):** Lateral mandible to the ramus

### **Innervation:** Mandibular

**Notes:** This is one of the most well developed muscles in the horses body as it is the primary muscle for chewing food. As most horses predominantly chew to one side, 60-70% of the horse show asymmetry in the Masseter muscle. This muscle can get compromised due to pulling back when the horse is being tied, any entrapment of the head, grinding of the teeth, cribbing or dental issues. These actions might lead to head shaking, facial paralysis or muscle atrophy. Signs of pain and dysfunction could be difficulty chewing (food might fall out), excessive yawning or unilateral movement of the mandible, weight loss, resisting or heavy on the bit, head tilting/ shaking or difficult to bridle.



Cross section of the Masseter. Look at the white tendon sheets inside

### **OMOHYOID**

**Function(s):** Retracting the hyoid and the foot of the tongue

**Origin(s):** Subscapular fascia (inside) dorsal to the shoulder joint.

**Insertion(s):** Lingual process of Basihyoid → hyoid apparatus.

**Innervation:** 1<sup>st</sup> cervical → vertebral branch

**Notes:** A ribbon like muscle that is almost entirely fleshy. It passes as a complete entity ventral to the trachea in the throat, after which it bifurcates and passes medial to the Sternomandibular. It then forms an intimate attachment to the ventral medial aspect of the Brachiocephalic before diverting away towards the horse's midline underneath the Cranial deep pectoral. This shows an anatomic connection from the bit - tongue - neck – subscapular region.

## **STERNOHYOID**

**Function(s):** Depresses the tongue and hyoid

**Origin(s):** Manubrium (sternum)

**Insertion(s):** Body of the hyoid

**Innervation:** 1st-2nd cervical nerves

**Notes:** Together with the Sternothyrohyoid this muscle connects the hyoid to the sternum playing a role in the bit – tongue – shoulder – front leg chain.

## **STERNOTHYROHYOID**

**Function(s):** Depressing the larynx when swallowing

**Origin(s):** Manubrium → sternum

**Insertion(s):** Lateral thyroid cartilage

**Innervation:** 1<sup>st</sup>-2<sup>nd</sup> cervical nerves

**Notes:** Together with the Sternohyoid this muscle connects the hyoid to the sternum playing a role in the bit – tongue – shoulder – front leg chain.

## **TEMPORALIS**

**Function(s):** Assisting the masseter in closing the jaw and keeping it clenched

**Origin(s):** Parietal ridge, sagittal crest/interparietal ridge, nuchal/occipital crest, parietal occipital, temporal and sphenoid bones.

**Insertion(s):** Coronoid process.

**Notes:** Its insertion can overlap and blend into the masseter muscle and it thus intimately linked. Just as the masseter, the temporalis is also unilateral in size due to uneven chewing of most horses.

## **BUCCINATOR**

**Function(s):** Retracting the angle of the mouth, aiding in maintain the position of the food in relation to the molars and is also used to suck up liquid.

**Origin(s):** Upper and lower jaw and coronoid process.

**Insertion(s):** Orbicularis oris muscles.

**Innervation:** Facial

**Notes:** the buccinator can easily become compressed by tight nosebands – so also cavesson - which restrict its function.

### **DEPRESSOR LABI**

**Function(s):** Detracting and depressing the lower lip.

**Origin(s):** Upper and lower jaw

**Insertion(s):** Tissue of lower lip.

**Innervation:** Facial

**Notes:** This muscle often shows a horse's mental state. It is linked to the Buccinator muscle as well.

### **LONGUS CAPITUS**

**Function(s):** Singular contraction: Inclining the head to the same side of contraction.

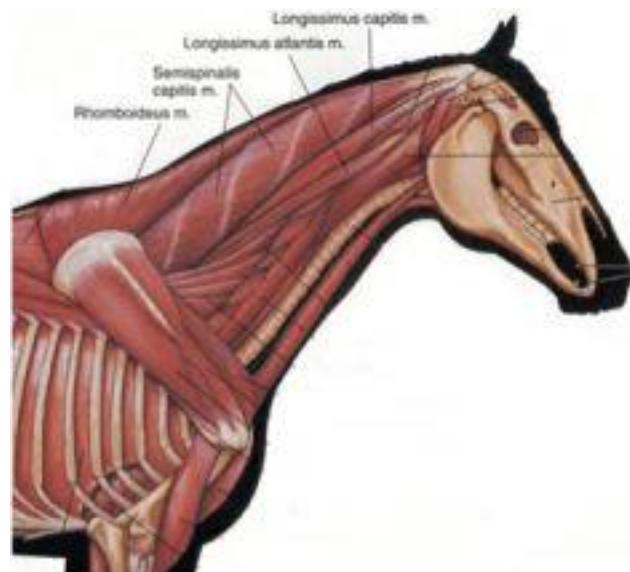
Bilateral contraction: Flexing the head

**Origin(s):** Transverse processes of C3-C5

**Insertion(s):** Occipital bone → Ventral side

**Innervation:** Cervical nerves → ventral branches

**Notes:** This the largest head flexing muscles. It can be easily palpated around C2 where it lies underneath the Brachiocephalic. Since it flexes and fixes the poll, this muscle often gets quite stimulated at high level dressage.



### **CRANIAL HEAD OBLIQUE**

**Function(s):** Singular contraction: flexing the head laterally

Bilateral contraction: extending the head

**Origin(s):** C1 → cranial edge and ventral surface of the wing

**Insertion(s):** Skull → nuchal, crest, jugular and mastoid process.

**Innervation:** Cervical nerves → dorsal branch of C1.

**Notes:** This muscle has quite some tendinous tissue. It becomes under a lot of strain when a horse draws back on the halter or is trained in drawreins or Rollkur position.

## **SPLENIUS**

**Function(s):** Singular contraction: inclining the head and neck laterally.

Bilateral contraction: Elevating the head and neck.

**Origin(s):** T3-T5 → Dorsal spines

Nuchal Ligament → Funicular cord

**Insertion(s):** Nuchal crest, mastoid process, wing of atlas, C3-C5 → transverse processes.

**Innervation:** Cervical nerves → dorsal branch of C2-C7.

**Notes:** This muscle is very important for selfcarriage. It shares an aponeurotic attachment with the Brachiocephalic and Longissimus Capitus.

## **SEMISPINALIS CAPITUS**

**Function(s):** Singular contraction: inclining the head.

Bilateral contraction: extending the head and neck.

**Origin(s):** T3-T5 → Dorsal spines

T1-T6/T7 → transverse processes

C1-C7 → articular processes

**Insertion(s):** Skull → occipital

**Innervation:** Cervical nerves → dorsal branch of C2-C7.

**Notes:** This muscle is has two distinct portion referred to as the dorsal biventer cervicus and ventral complexus.

## **LONGISSIMUM CAPITUS & ATLANTIS**

**Function(s):** Singular contraction: flexing the head and neck laterally or rotate C1

Bilateral contraction: extending the head and neck.

**Origin(s):** Capitus → T1-T2 → transverse processes

Atlantis → C1-C7 → articular processes

**Insertion(s):** Capitus → Skull → mastoid processes

Atlantis → C1

**Innervation:** Cervical nerves → dorsal branch of C2-C7.

**Notes:** The two muscles run parallel. Longissimus Atlantis shares an insertion with the

Brachiocephalic and Splenius. They can feel like leather straps when palpated in a horse with a stiff neck.

**THE END**😊