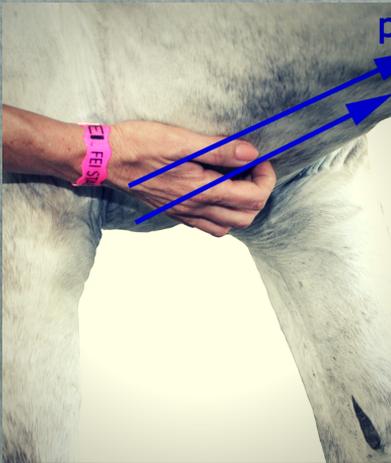
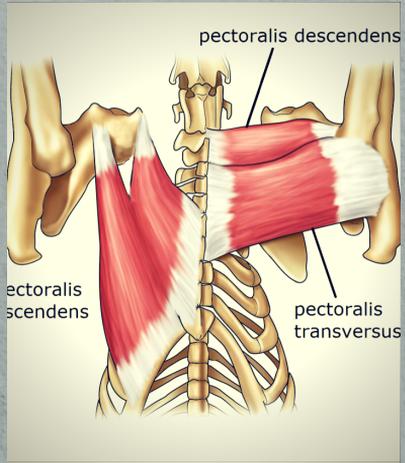
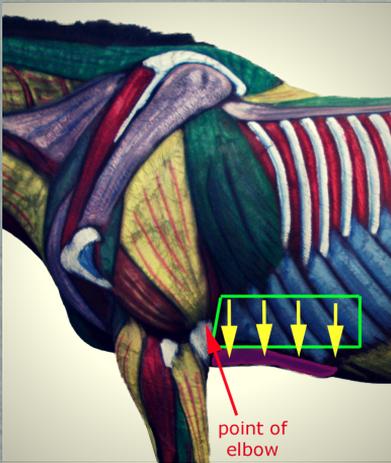


PDF "HOW TO" SERIES

TARGETING THE EQUINE PECTORAL MUSCLES

THE EQUINOLOGY APPROACH TO EQUINE BODY WORK



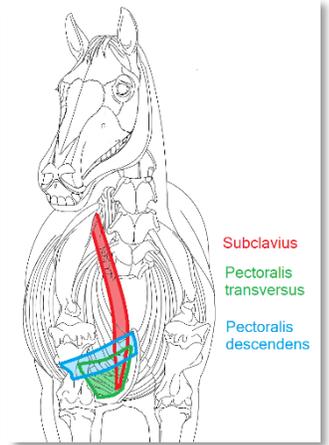
DEBRANNE PATTILLO, MEEBW

TARGETING THE PECTORAL MUSCLES

Debranne Pattillo, Equinology CEO

It becomes difficult to isolate one group of muscles when they impact the horse in so many different ways! The pectoral muscles are divided into 4 different portions. In the illustration, three of these are shown; subclavius, pectoralis transversus and pectoralis descendens. The fourth, pectoralis ascendens, will be shown later since a different view of the horse is required.

These muscles all have some capacity to bring the forelimb closer to the trunk (adduct) as well as accompany other muscles to suspend the trunk through the forelimbs. However, some have varying jobs depending whether they terminate in front or behind the forelimb.



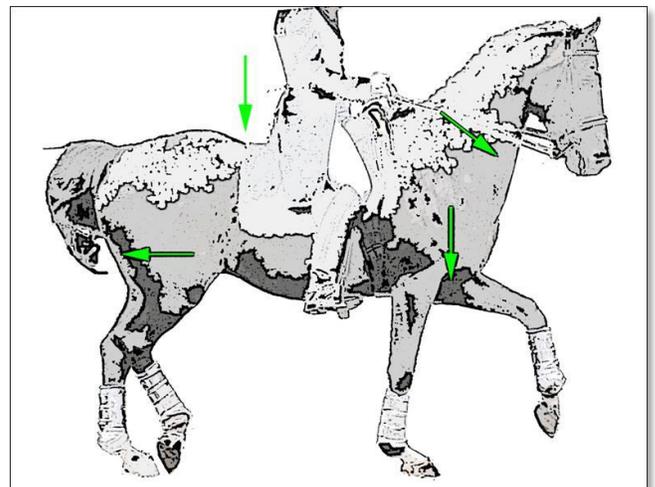
The pectoral muscles as part of the “sling”

Most horse people already know that the horse’s forelimb is analogous to our arm with some variation. The horse’s “arm” is different in many ways besides just the number of digits, the longer bones of the hand (metacarpals) compared to ours and the varying shapes or other lengths. The horse does not have a shoulder joint like we do. If they did this would really limit the length of stride; not a very good thing for the early horse trying to stay off of someone else’s dinner plate!

The forelimb is attached to the body by ligaments, muscles and their tendons. The shoulder girdle of the horse is a group of muscles coming from the spine (backbone) or sternum (breastbone) of the horse and ending on the forelimb to suspend the trunk between the forelimbs. When the pectoral muscles are not working well all the other muscles of this apparatus are disrupted which includes the cervical (neck) and thoracic (trunk) portions of the rhomboid, serratus and trapezius muscles.

Problems which may arise from dysfunction involving any of the pectoral girdle muscles:

When any of the muscles previously mentioned lose the ability to work properly, this dysfunction will limit the dorsal/ventral (up/down) excursion between the forelimbs. This affects the recoil/suspension and shock absorption similar to a baby bouncer that wears out, no bounce anymore and the baby (horse’s trunk) hangs lower through the support struts (horse’s legs) of the bouncer. With the trunk pressed lower to the ground, the horse will no longer be able to engage himself properly especially when addressing the additional weight of the rider and effectually the chain reaction will lead to unsoundness. The added pounding to the limbs can lead to arthritic and structural changes.



A good reference to the many aspects of collection is listed at the end of this article since allowing a horse to use its body properly is a book in itself. You can't leave out raising the base of the neck thus straightening neck and trunk curve of the spine (cervicothoracic curve), coiling the loins, flexing the haunches and so on. Here is something you can picture to see how fast things can go bad. Imagine a horse that drops away from a poor fitting saddle at the withers and hollows the back or is ridden upside down due to rider skill. The trunk is already in the lower position and will never rise to the withers trying to avoid pain therefore unable to properly engage the back. To stay in this awful position, the neck actually bends more at the base and the nose pokes out unless restricted by the reins or gimmicks. The back hollows and tightens making poor use of the junction between the lower back and croup (lumbosacral junction) as well as where the hindlimb attaches to the spine (sacroiliac joint) eventually making it difficult to get the hind legs under the body. Not pretty and more importantly, pathological. Pathology is defined by medical dictionaries as: the scientific study of the nature of disease and its causes, processes, development, and consequences.

Causes of pectoral pain:

Saddle: Besides an incorrect fit or broken tree, the placement of the saddle needs to be considered. Every horse has its own natural girth line. Conventional girths or cinches need to run perpendicular to this spot which runs across the ascending (posterior) pectoral muscle; the lower yellow muscle in the painted horse. If it doesn't lie perpendicular to the ground, consider a girth fashioned like the "Logic" girth or look for a well-made "V" rigging or investigate changing the position of the rigging or the billets.

Check the length of the girth too since the hardware on a girth or cinch that is too short can cause damage. Girths that are too narrow place too much pressure in a concentrated area which will eventually negatively affect the horse. Some horses also do better with center loading elastic girths. Since all pectoral muscles arise from the sternum (breast bone) special consideration of a comfortable girth and cinch are essential.

Poor riding skills: It's a fact, and it has already been mentioned but if you are a beginner or unskilled rider one of the best things you can do is learn how to ride...compassionately.

Poor use of training aids or training approaches: The entire body is eventually affected if horses are mismanaged in their training approaches or use of improper training aids that are unnatural, ignorant or brutal.

Front end loading sports: Besides the juvenile or green horse unaccustomed to carrying weight, any discipline that simulates a push up can stress these pectoral muscles if overworked or under conditioned. Riding on the forehand places more stress in the pectoral area. Keep a close eye on these muscles if training in a discipline which requires the horse to work over varying inclines and terrains and those involving any jumping or cutting.



Photo from County Saddlery

<http://www.countysaddlery.com/products/accesso>

Protection of primary causes: If a horse has a distal limb issue he is going to tense these muscles. Sensitivity in these pectoral muscles can mirror a C7 -T1 (last neck bone, first trunk bone) spinal issue as well as other neck issues. Problems here are often associated with horses that object to girthing or cinching.

Improving the pectoral muscles:

- Learn some simple bodywork techniques
- Understand the roles of the muscles and where they lie (in muscle facts section)
- Recognize sensitivity (in muscle facts section)
- Employ a realistic training and conditioning program

Equinology® approach to bodywork for the pectoral muscles

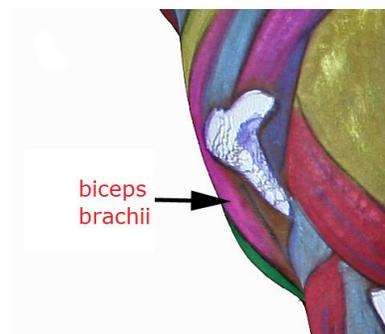
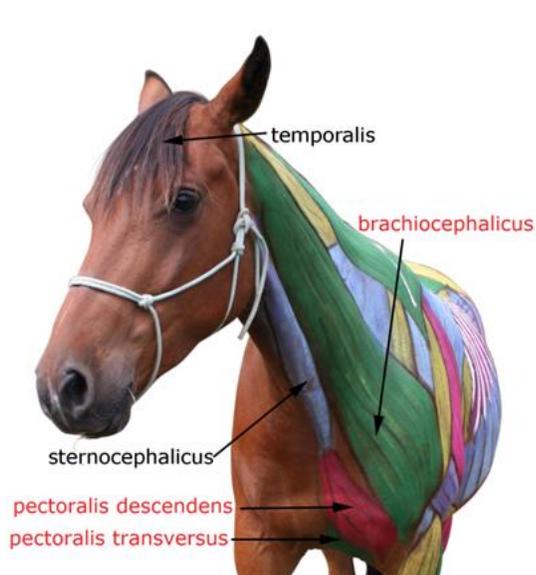
First a few reminders...

- Avoid any significant pressure anywhere you see muscles obviously meeting and making an indented seam. Veins, arteries and nerves may be running through these gullies.
- Don't hard tie your horse in case you hit a sensitive point. The horse may react by pulling back.
 - If you have any concerns, don't attempt these moves. Ask your vet if these are appropriate for your horse especially if your horse is under current veterinary care.
- Don't apply bodywork on a horse with any elevated vital signs.
- If your horse is ill, injured, has a skin condition, has unexplained bumps or swelling, displays any neurological deficits or lameness or "just ain't right" (JAR horse), clear this work with your primary care veterinarian first.

Working the Chest: Here we are going to be targeting all the pectoral muscles except for the one lying behind the forearm (pectoralis ascendens). While we are in this area, it is difficult to ignore the biceps brachii and the lower portion of the brachiocephalicus muscle.

The muscles of the chest

- pectoralis descendens (pink)
- pectoralis transversus (green)
- biceps brachii (magenta)
- lower portion of the brachiocephalicus (green)



Make sure you know where all the external landmarks are in this area:

Point of shoulder (the cranial portion of the major tuberosity of the humerus):

The “corner” of the horse’s shoulder is the cranial edge of the humeral (arm) bone. Stand next to the horse’s shoulder and face forward. Using the outside hand, reach around your body and rest your hand on the chest. Draw your fingers towards the side of the shoulder from the corner of the shoulder. The first slight bump you run across is the point of shoulder of this landmark.



The tip of the sternum (cartilage of the manubrium)

There are two ways to find this. Run up the middle crease made by the pectoral muscles. Keep your finger slightly curled as shown and you will land on the ledge of the manubrium. You can also try running a flat hand down the neck until you hit the ledge.

Let’s get started....

Targeting the pectoralis descendens (descending pectorals):

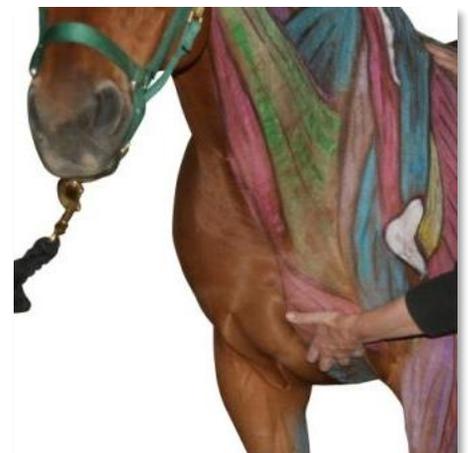
You will be addressing the origin of the subclavius muscle too since it starts in the same area as this muscle.



Stand at the shoulder of the horse facing forward and locate the two bony landmarks as described above. Point your fingers downward and rake downward as if you were combing long hair with your fingers beginning at the top of the muscle.

Start out light; about the weight you would use on the rim of your eye socket. Increase the pressure and intensity as the horse allows and more importantly enjoys.

Now circle with your finger tips from the bottom the upward as if you had a curry in your hand. The move should feel similar to what you experience when your hair dresser uses their fingerpads shampooing your hair; not too light to annoy and not too hard to become uncomfortable.





Find the tip of the manubrium (sternum) and drop off to the side of it. Press your fingertips toward the side of the sternum (towards the center of the chest) and gently “sink” or “melt” inward. Hold for 20 seconds, then repeat. Move your hand down and repeat on the adjacent section. If it is a large horse (or you have small hands) you may need to drop down and repeat it one more time but stop before you are between the front limbs. Rake downward to close the area.

Targeting the biceps brachii:

Find the “seam” inbetween the last muscle (pink) and this muscle (blue). This is your marker for the medial (inside) edge of this muscle. Remember to be careful here, it is a seam and the cephalic vein runs lies in the valley.

Lay your fingers across as shown. Start at the bottom (of the blue muscle) and scoop upward with the flat portion of your fingers. Stop before you get to the point of shoulder. When you reach the top, slide down and repeat the move increasing your pressure as the horse allows.

Now rake your fingers and palm across the axis of the muscle moving right to left. Start at the bottom, you will find it easier. When you get to the point of shoulder, slide down and repeat for several more passes. Scoop a few times to close.



Targeting the pectoralis transverse (transverse pectoral):

Place one hand in front of the limb and the other behind the limb. Rest your fingertips on the blue muscle just to your side of the sternum which is the center seam of the horse. Stay here for 10-20 seconds to check in with your horse and keep an eye on that hind leg!

If all is well, use your fingertips to rake towards the armpit of the horse without actually going into it. Be gentle and alternate the fingertips of each hand moving about the pace of a rising trot. Since the muscles around the withers are not warmed up you really want to go slow enough to avoid the horse jerking upward into an uncomfortable position.

If the horse has accepted the move, turn your fingers so they are perpendicular to the sternum where you started and press upward. The horse may “lift” slightly but you will notice he’ll return his trunk and meet your fingertips allowing you to sink or melt into the tissue. Once this happens hold for 20 seconds. Repeat.

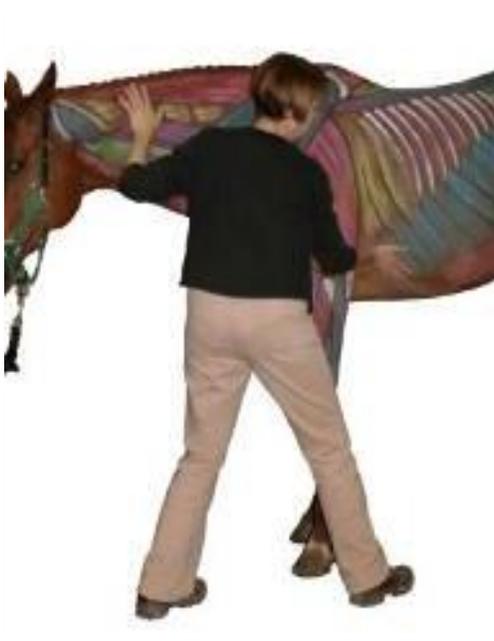
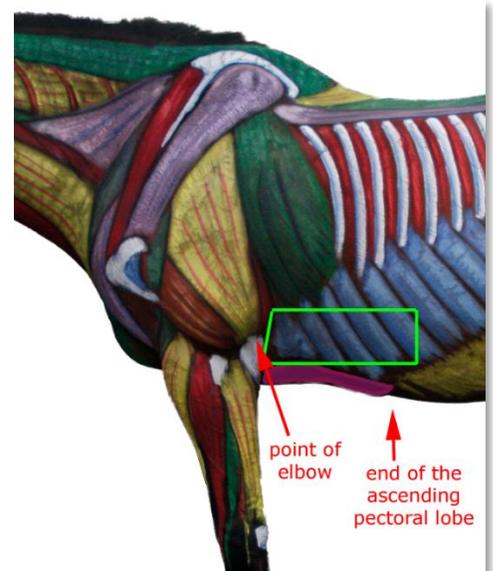


If the horse is particularly large you may need to bring the hand in front of the limb forward a bit along that first line, and the hand behind the limb rearward a bit and repeat the move. Rake to close the way you started the move. In next installment of this article (Part Two) we will discuss two stretches that can be done after you complete these moves.

Targeting the pectoralis ascendens:

Before we start working on this muscle, we need to check in with the landmarks and the horse's level of comfort.

The pectoralis ascendens muscle in this photo is the magenta one. The horse is resting a hind leg so she is exaggerating the end of the muscle. Don't go much further with this move beyond the lobe. The length of this muscle will vary in horses. Make a note of where the point of elbow lies. We are going to begin on the side of the horse addressing the obliquus externus abdominis (blue) within the green rectangle to desensitize the area rather than start with the pectoral muscle.

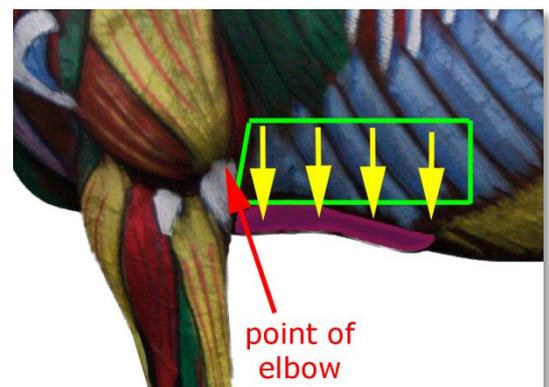


Your body position is essential when you begin for your safety. Notice the worker is facing the hind end to keep an eye on it with a hand resting on the neck to read the emotion and comfort level.

Run your opening strokes from the front of the green rectangle and continue rearward. Begin by resting your palm as shown here and check in with horse. Many horses can be very defensive for valid reasons. Leave it there until the horse is comfortably breathing and then move back further and repeat. Continue the entire rectangle. If the horse is fine, you are ready to move on. Using enough contact so the horse does not want to shake you off, stroke with your palm (iron) repeating the same horizontal path front to back a few times. Increase your pressure as allowed with each pass.

Try some slow shampoo curry like you did on the front of the chest and follow this same horizontal path.

Place your palm on the top of the first yellow line. If your wrist is bent excessively backwards use a nice loose open and relaxed fist instead. Apply only enough pressure so the horse leans into you. Once he accepts the pressure, gradually glide downward. Repeat each line at least 3 times and then iron the whole rectangle to close like you did to open.



Continuing to the pectoralis ascendens

If the horse was okay with the last move on the yellow arrows you can take this work a step further and target between the shoulder and the trunk area. Place the hand that is not working on the haunches away from the stifle. This hand can help “read” what is going on in the hind end when you are concentrating on the front. Point your toes forward. Rest your palm on that first yellow line but this time ease your way forward to soften between the shoulder and barrel. You can think of positioning your hand like a “gun” but if the horse is really leaning into the move you will want to tuck the thumb. If the horse is comfortable, drop your hand on the haunch and use both hands in this area. When using two hands, the backside of the new hand will be against the trunk instead of the palm. Keep repeating this and sink or “cleave” in-between as the horse allows.



Step back up to the shoulder like you began and shampoo curry the ventral area (underside) targeting the pectoralis ascendens with one hand slowly. Increase the pressure as the horse allows.

Rest both hands as shown. When we first did this move on the yellow lines we started higher. This time begin just as the trunk curves (shown here) and press downward towards the sternum with both palms and finger pads. After a few passes point your finger pads upwards just alongside the sternum.

Make sure the fingertips are perpendicular to horse's body like you did in the pectoralis transversus area. Hold the position for any lifts the horse offers and allow the horse to drop back onto your fingertips. Once your fingertips sink or melt into the tissue, hold for 20 seconds then repeat the move. Move both hands rearward to repeat the entire move on the rest of the muscle.



Muscle facts and recognizing sensitivity

SUBCLAVIUS: (Formerly the cranial deep pectoral or pectoralis cranialis profundus)

ORIGIN: This muscle begins on the cranial half of the lateral surface of the sternum and the first four costal cartilages.

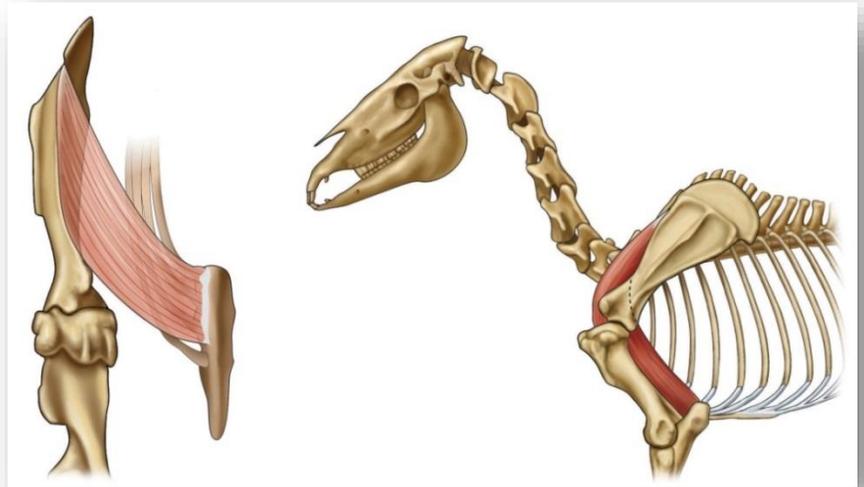
INSERTION: It ends on the middle third of the cranial border of the scapula and associated fascia.

FUNCTION: This muscle assists the serratus ventralis in supporting the trunk when the foot is on the ground. It rotates the entire proximal forelimb in a paramedian plane, moving the scapula cranially and the humerus caudally.

STRUCTURE: This fleshy muscle is prism shaped blending at its insertion with the supraspinatus and the shoulder fascia.

REACTION: Palpating along the side of the sternum or at the insertion on the front of the scapula will illicit a resentment or the horse will swing the top of the scapula forward, or stomp.

PROBLEMS: When this muscle is shortened the protraction phase (reaching forward) of the forelimb is restricted. There may be a loss of free scapula movement and the shoulder may appear more upright on the affected side. A loss of performance may be noted in riding disciplines where the horse is asked to load the front end considerably such as cutting and jumping.



PECTORALIS DESCENDENS: (Descending pectoral muscle) (previously named the anterior or cranial superficial pectoral muscle)

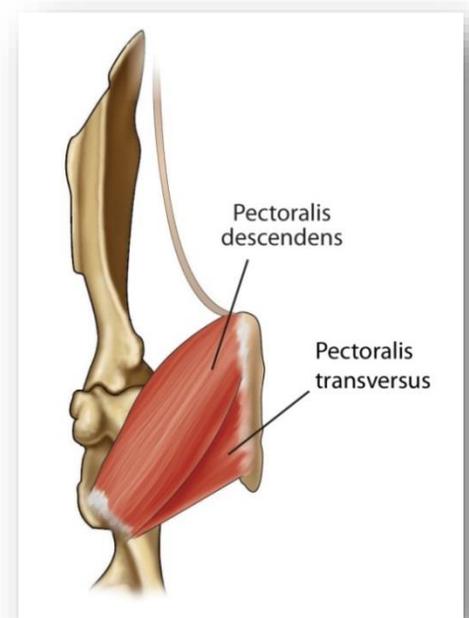
ORIGIN: This muscle begins at the manubrium. This is the cartilaginous cranial end of the sternum.

INSERTION: This muscle ends on the deltoid tuberosity, the humeral crest and the fascia of the arm. It shares the insertion on the humeral crest with the transverse pectoral and the brachiocephalicus.

FUNCTION: When active this muscle provides adduction and protraction of the forelimb (moving the limb forward as the body moves forward).

STRUCTURE: The descending pectoral slightly overlaps the cranial edge of the transverse pectoral and the two muscles are not easy to separate. The groove (seam) between the brachiocephalicus and the descending pectoral contains the cephalic vein. Avoid any pressure here.

REACTION: The horse may object to any palpation along the sternum. The horse will hug the arm closer to the midline rather than rotate the scapula forward like the previous muscle. The muscle may be tender to touch and any pressure may aggravate the horse; watch for teeth and strikes. Issues may feel like tight cords or



hard knots against sternum.

PROBLEMS: Sensitivity here can mirror a C7 -T1 issue or any distal limb problems (the end of the leg to the hoof and its bones and structures). Problems in this muscle are often associated with horses that object to girthing. This muscle is often stressed when horses are green, juvenile, ridden on the forehand, or horses in disciplines with actions simulating push-ups.

PECTORALIS TRANSVERSUS: (Transverse pectoral muscle)
(Previously named: posterior or caudal superficial pectoral)

ORIGIN: This muscle originates from the ventral edge of the sternum from costal cartilages 1 – 6, and from the midline fibrous raphe (septum) between the right and left muscles.

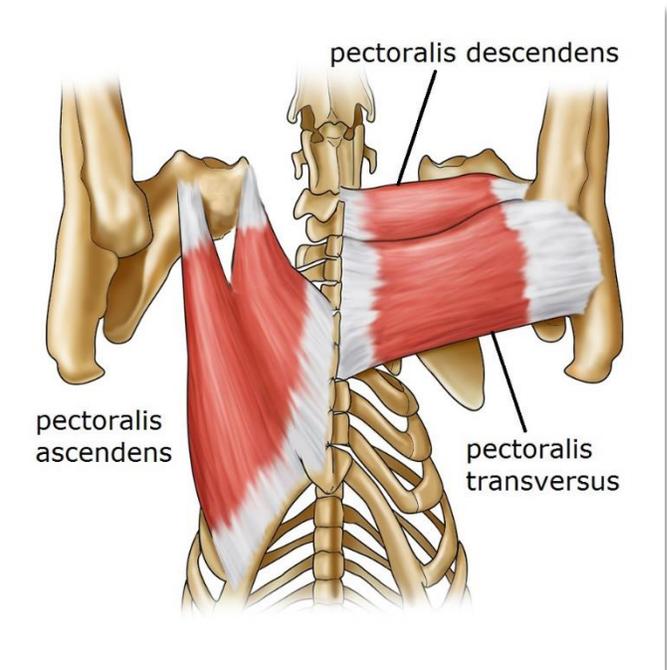
INSERTION: This muscle terminates on the fascia of the proximal third of forearm and, with part of the descending pectoral, on the curved ridge running distally from the deltoid tuberosity (the humeral crest).

FUNCTION: When active it adducts the forelimb and tenses the fascia of the forearm.

STRUCTURE: This superficial muscle is wide and thin.

REACTION: The horse may be sensitive and show aggravation/resentment to any palpation especially along side the sternum in-between the limbs. If the horse resists lifting up through the withers, thoroughly check that area and spine for primary or compensatory issues. Problems here may feel like tight cords or hard knots against sternum. A horse that was not previously standing base narrow may adapt its posture to accompany the tightened side by bringing the limb closer to the midline.

PROBLEMS: Issues here are often associated with girthy horses. Like the pectoralis descendens, this muscle is often stressed when horses are green, juvenile, ridden on the forehand, or in horses in disciplines with actions simulating push-ups. When only one side of the muscle is affected, the abduction phase on that side in lateral movements such as half pass or leg yield may be limited (he will not reach out to the side as much with the shortened problem side).



PECTORALIS ASCENDENS: (Ascending pectoral muscle)

(Formerly referred to as the deep pectoral posterior pectoral or caudal pectoral muscle)

ORIGIN: This muscle arises from the ventral surface of the sternum, the xiphoid cartilage, the adjacent costal cartilages of ribs 4 – 9 and the abdominal tunic.

INSERTION: The primary insertion of this muscle is on the cranial part of medial tuberosity of the humerus just below the medial insertion of the supraspinatus. A slip of tendon also curves around the cranial aspect of the head of the humerus to reach the lateral tubercle, binding down the tendon of origin of the biceps as it goes. Another slip may insert on the tendon of origin of the coracobrachialis.

FUNCTION: If the forelimb is raised, it is retracted and adducted. If it is fixed, the trunk is drawn forward. Because of its insertion on the medial aspect of the arm this muscle can also cause pronation.

STRUCTURE: This is a fan or triangular shaped muscle and the largest of the pectoral group.

REACTION: The horse will jerk its back upward with a light to medium touch. The horse may object to tightening the girth or cinch. The horse will object to stretching the leg out in front.

PROBLEMS: The performance will diminish in just about every riding discipline due to shortening of the forward stride. The horse will be working out of sync. More steps are required to cover the same distance with a shortened stride so stamina may suffer too.

Not only is the cranial phase shortened, the limb tends to land to the inside of track. Girthing issues are common when there is sensitivity here. This muscle may be involved in tying up or colic cases. Any issues within the sternum may increase the sensitivity here. Remember to check the latissimus dorsi as well as the rest of the pectoral group. Horses that tend to hollow may cause additional problems here as the muscle is taut against the sternum for long periods of time. A horse that is trying to compensate for poorly fitting saddle may injure this muscle.

Conditioning the pectoral muscles

Varying your horse's exercise regime is an extremely beneficial aspect of your horse's wellness and athletic program. Cross training allows the horse to utilize muscles a specific riding discipline does not target creating a better athlete. The suggestions here are for a sound horse. If you are not sure if an exercise is appropriate for a horse that is recovering from an injury or living with one, please consult your veterinarian.

First, you need to evaluate your horse as to what they can emotionally handle. If you do not feel comfortable outside an arena or the horse is too nervous (or both) perhaps you can begin new exercises in hand, or ride out with another horse or have a calm confidence building rider take your horse out instead. Maybe you have the opposite problem where you only ride on trails because you have no arena. Some horses inexperienced in arena work are claustrophobic and any arena let alone a covered one is going to make them nervous. If you can trailer or ride to a place with an arena, perhaps you can approach it in the same manner as the horse that is inexperienced outside the arena.

Next take a look at your surroundings. Do you have some slight inclines to use? How about varying terrain; can you pass over several different ones as you ride (firm ground, sand, grass, gravel etc.)? Can you step on to things and then down? Do you have enough room to utilize speedplay (changing the speed within the gait)? Is there any water around (make sure it is not slippery getting in or out)? If your horse moves forward nicely on the trails, how about starting half steps? You are looking for ways to challenge your horse.

Four good books for reference are:

Activate Your Horse's Core: Unmounted Exercises for Dynamic Mobility, Strength & Balance by Drs. Narelle C. Stubbs and Hilary M. Clayton

Cavalletti: Schooling of Horse and Rider over Ground Rails by Reiner Klimke

Improve Your Horse's Well Being by Linda Tellington Jones

Conditioning the Sport Horse by Dr. Hilary Clayton

Downhill work utilizes these pectoral muscles as brakes (as well as the inner thigh muscles). Find some hills and work them sensibly. If you don't have hills think about improving your transitions on the trail or in the arena.

Cavalletti work as well as ground poles are instrumental in improving these muscles as well as the strength and overall coordination. Gymnastics are great for horses and most any sound horse can handle raised poles once they are conditioned to negotiate them physically and emotionally.

Since one of the roles of the three ventral pectoral muscles is to adduct the arm (bring it inward), incorporating lateral work will also help develop these. The *Cavalletti* book as well as other good riding books (the old *Riding Logic* by Museler comes to mind) have numerous exercises which include lateral work.

Eventually you can also try incorporating an abdomen band on your horse. Pictured is the Equiband™ system which can be viewed here:

<http://equicoreconcepts.com>

(Photo provided by Equicore Concepts)

If you are really lucky and have access to an equine sports center, a variety of treadmills and swimming choices might be available. Look at the dream center where local athletes utilize the facility for conditioning and training:

<http://www.circleoakequine.com/rehabilitation-services/fitness-programs>



Bottom line? Use common sense and continue to monitor and re-evaluate your horse's muscles and condition.

A final note on welfare

You can do all the bodywork you wish to try and improve any muscle but if you don't give the horse the time and proper training to develop and strengthen muscle, your horse will suffer.

You are the advocate for your horse. Education is powerful. You do not have to agree with every training approach especially since no approach suits every horse but you should keep an open mind. Variables such as health, condition, existing problems, conformation, age, housing management, etc. all factor into the best approach for your horse. If any trainer tells you that every horse has to follow the exact same program and protocol, run.

As an advocate for your horse, you must speak up for him. This author has learned the hard way on several occasions and has heard or witnessed events at the expense of the horse. If your horse is not conditioned for a level of work; do not let the clinician showcase your horse for the audience. A good clinician will demonstrate the potential briefly or explain where you are going with the exercises but will not repeat moves over and over. They will not allow your horse to get too tired. Fatigue is an enemy and opens the door for injury. If you participate in a clinic with your horse and you feel his back stiffen and remains braced, stop and check in with your horse to make sure everything is okay.

Life makes us all a little less than perfect. Just make the conscious effort to try and do a little better.

Resources:

Ulcers, You Really Need to Know More: Dr. Kerry Ridgway:

<http://www.drkerryridgway.com/articles/article-ulcers.php>

Common Causes of Poor Performance in a Horse:

<http://www.tufts.edu/vet/sports/performance.html>

Biomechanics of the Dressage Seat:

<http://www.dingosbreakfastclub.net/DingosBreakfastClub/BioMech/BioMechmuscle.html>

Osteopathy and the Treatment of Horses by Anthony Pusey, Julia Brooks, Annabel Jenks

True Collection:

http://www.sustainabledressage.net/collection/true_collection.php

Available online for purchase:

Activate Your Horse's Core: Unmounted Exercises for Dynamic Mobility, Strength & Balance by Drs. Narelle C. Stubbs and Hilary M. Clayton

Cavalletti: Schooling of Horse and Rider over Ground Rails by Reiner Klimke

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