Harm of riding study. Part III.

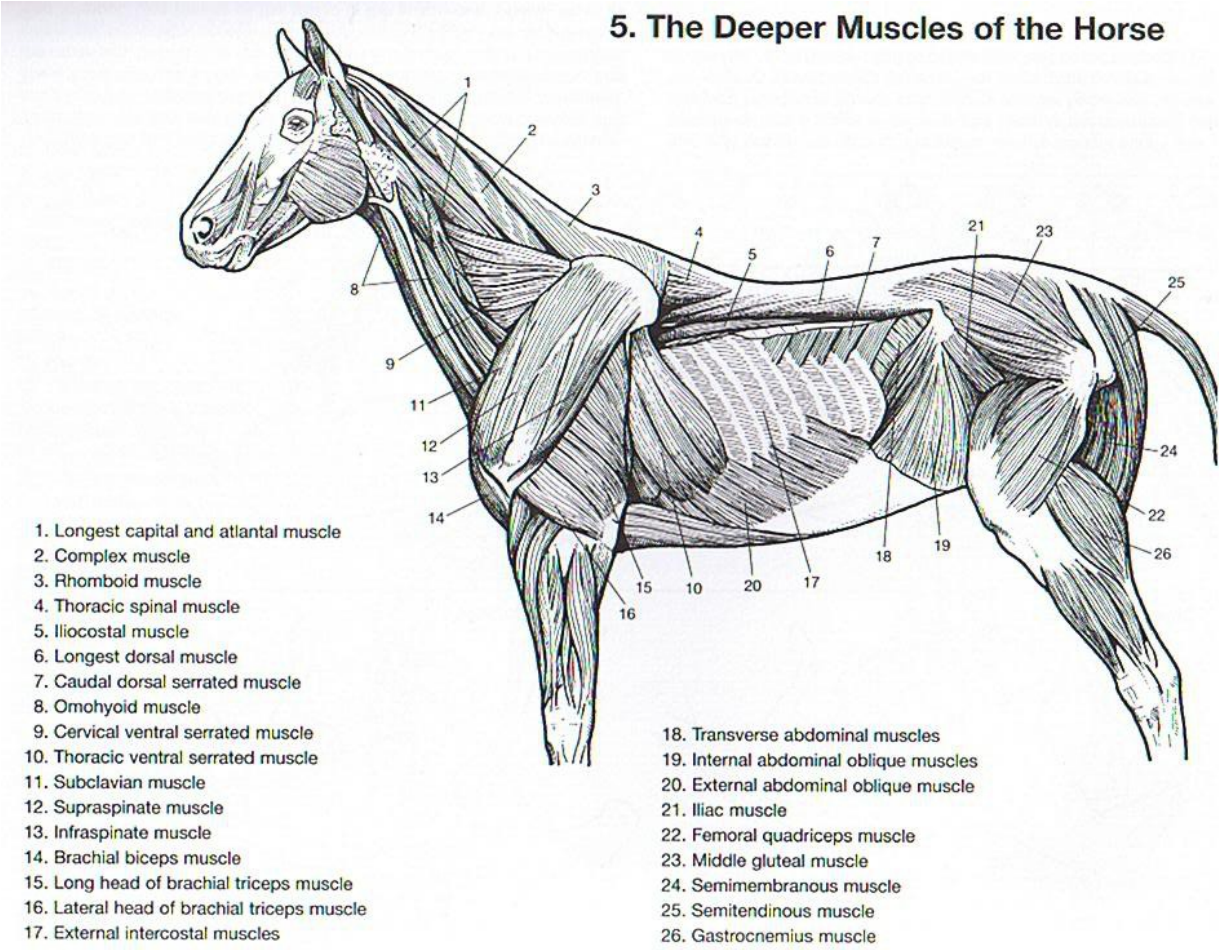
by Maksida Vogt. 30.10.2008

Damage to the epaxial (muscle) tissue above and surrounding the vertebral column is the most common cause for backpain in the horse. (Jeffcott 1993)

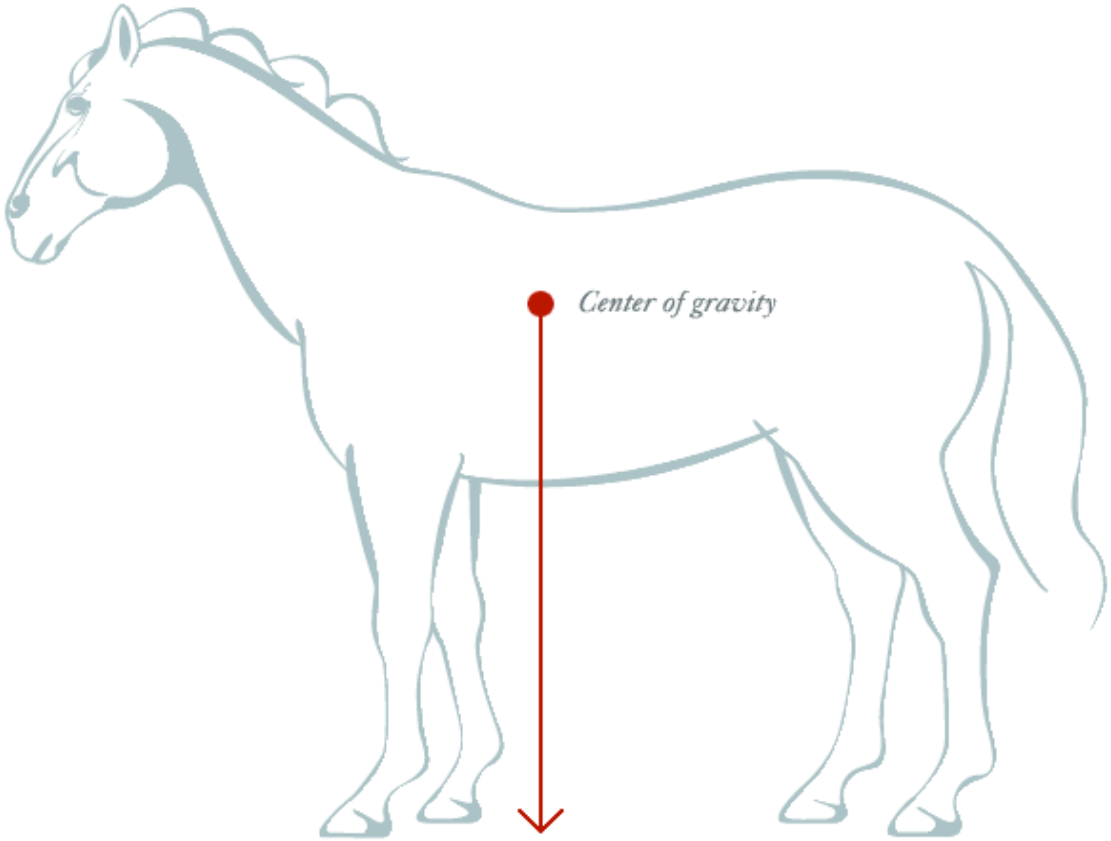
To make this study complete, we also need to involve the muscle tissues in the thoracic and lumbar area. Jeffcott and Dalin (1980) divided the main muscles in the horse's back into three groups: - Superficial muscles: trapezius, and cutaneus – Deep muscles: serratus dorsalis cranialis, serratus dorsalis caudalis, longssimus dorsi, multitidi dorsi, iliocostalis dorsalis, and intertransversais lumborum – Sublumbal and gluteal muscles: psoas minor, psoas major, iliacus, quadratus lumborum, and glutealis medialis

The most important muscle is the longissimus, which is divided into several parts; the longissimus lumborum, thoracis, cervicis, and atlantis. Together, the longissimus muscle group stabilizes the vertebral column and helps bear the load of the body. For example, by flexing the forehand, it bends the back and lifts the croup so the horse is able to kick. By flexing the hind quarters it helps with lifting of the thorax and enables the horse to rear (stand on the hind legs).

The iliocostalis muscle stabilizes the thoracic and lumbar area and participates in lateral flexion.The iliopsoas muscle participates in the bending of the vertebral column up and down when standing.



The vertebral column of the horse is constantly under pressure. The force of the body weight at the center of gravity bends the vertebral column ventrally. To withstand this, other forces must work as a counter balance. Through caudal strain of the longissimus and multifidus muscles, and cranial strain of the spinalis dorsi (thoracis et cervicis) – the vertebrae are held pressed against each other. This helps to stabilize the vertebral column and works to counter balance the dorsoventral forces. (Rooney, 1979)



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Distortion or overexpansion from overstress and/or overstrain, causes great damage to ligaments and muscles. The cranial part of the lumbar vertebrae is often the area where much of the distortion is localized. Many factors take part in the occurrence of distortion, for example, long periods of working the horse (*conventional riding). (Snow and Valberg 1994; Turner 1992). These factors contribute to the depletion and destruction of muscle tissue, reduction of elasticity in the tendons and ligaments and loss of coordination, which whereby leads to the distortion of other structures of the body. Because of painful tension in the back, horses try to avoid certain movements- which again leads to more tension and distortion.

Academia Liberti defines riding as an activity taking no longer than 15 minutes and only in natural and free collection in order to avoid the possibility of harming the horse.

Meyer wrote 1996:“Through the wrong effect of rider hand and seat which takes direst influence at the poll, neck and back of the horse, there happen disfunctional tensions, insufficient relaxations, orthop malposition and disfunction of the movement tact.“

Academia Liberti has a well-defined and scientific position supporting the fact that every seat and manipulation to the horse’s body (through forced and mechanical means), causes these detrimental effects, especially if the horse is not taught or allowed free and natural collection and is not kept in optimal natural conditions.

Insertion desmopathy is defined as pathological changes of the tendons, ligaments and joint capsules where tendons and ligaments attach to bone. Bones and periosteum are mostly involved. By overstress at one of these such points, trauma of the soft tissue and bone tissue occurs, whereby partial avulsion (force-able detachment of tendon or ligament from bone) is possible, and in severe cases bone tissue can fracture and tear out completely, which is called an avulsion fracture. 1988 Huskamp and Nowak investigated insertion desmopathy and their localization in the horse’s body. The following histological changes were proven:- loosening of the collagen fiber bundle- fatty degeneration and swelling of the ligament tissue- cell necrosis in the ligaments and bones- parts of hyalinie collagen connective tissue was damaged with multiple lesions and

tumors.

At the beginning stages of this disease, there are no changes to be seen on x-rays.

Changes are only seen after a fracture happens.Desmopathy at the supra spinal ligament generally appears in the area of thoracic vertebrae15- lumbar vertebrae 3, and are noticeable through swelling and a pain reaction by the horse during palpation. Dr Gabriele Hüntemann made an investigation in 2007, together with Prof. Dr. L. Brunnenberg, Prof. Dr. K. Hartung and Prof. Dr. H. Keller, about insertion desmopathy of the nuchal ligament in a group of 180 horses. Symptoms: horses did not “give back freely” while ridden, had difficulties bending at the head and neck or through the body, headshaking, horse bends and holds midsection out to one side or the other, horse jumps into a gallop.

All the horses with these and similar symptoms were medically proven to have mid to severe damage to the spinous processes. The appearance of symptoms typical for horses with back pain clearly correlate with damage such as insertion despompahy of the occipital nauchal ligament.

Soft tissue injuries are one of the main causes of back pain in horses. Jeffcott (1980) did a study on 443 horses, 38.8 % had soft tissue injuries, and 22.37 % had distortion or deformation of the muscles and ligaments.

Analyses of the findings on the 443 horses:

Ligament distortion - 117 horses - 22.37%
Stress myopathy (muscular disease) - 7 horses - 1.34%
Soft tissure injuries - 203 horses - **38.8%**
Sakroiliitis (inflammation of the lower spine) - 69 horses – 13.19%
Lumbar vertebrae luxation - 1 horse - 0.19%
Cauda equina neuritis (lesions and inflammation of the nerves) - 3 horses - 0.57%
Spinal cord abscess - 2 horses - 0.38%Chir. complications - 4 horses - 0.76%
Scoliosis - 1 horse - 0.19%
Lordosis (swayback) - 7horses - 1.34%Other forms of changes - 7 horses - 1.34%
Vertebrae body fractures - 5 horses - 0.96%
Spinous process fractures - 8 horses - 1.53%
Spondylopathy (disease of the vertebrae) - 14 horses - 2.68%
Other degenerative changes - 2 horses - 0.38%
Vertebrae injuries - 202 horses - **38.6%**
Joint lameness - 20 horses - 3.82%
Distal limb lameness - 11 horses - 2.10%
Abnormal temperament - 24 horses - 4.59%
Teeth problems - 11 horses - 2.10%
Number of total diagnoses 523

Undiagnosed – only 37 horses - 7.0%

Rhabdomyolysis is defined as the rapid breakdown of muscle tissue due to injury resulting in the release of muscle fiber contents (myoglobin) into the bloodstream- which are harmful to the kidneys. Horses with rhabdomyolysis show very clearly one or more of the following clinical symptoms: **sweating, fear, tremor, stiffness, myoglobinuria** (red urine as result of muscle breakdown). Also **tachycardia** (excellerated or rapid heart beat), **tachypnea** (rapid breathing) and a slight **increase of body temperature**. The horse may **move unwillingly** and in some cases of **exhaustion, diaphragma** (cellular diaphrams) can **begin to flutter** and the **horse can die**. (Andrews 1994, Snow and Valberg 1994). Rhabdomyolysis can appear at the beginning or the end of a horses workout. **If a horse does not like or want to move, it can often happen that rhabdomyolysis is confused with or misdiagnosed as tetanus, hypocalcemia (low calcium) or laminitis**. Some horses show such strong pain symptoms that rhabdomyolysis is confused with colic. Hodgson (1993), Snow and Valberg (1994) allege that **acute rhabdomyolysis mainly appears after hard working (riding)**. It happens through the disturbance of important diaphragm pumps like the sodium-potassium pump, calcium-

magnesium pump and calcium-ATPases pump (transfers calcium after the muscle has contracted). The high calcium concentration disturbs oxidation of the mitochondria, damages the cell diaphragm, disrupts the myofibrils and destroys the cytoskeleton. Lewis (1989) sees the Tying-Up-Syndrome as a disease of the muscles that happens after long periods of working a horse. We feel that it is our duty to show the pain the horse suffers through an uneducated or malisioius humans manipulation and control.

To be continued.