Abstract
Equine myofascial lines: Verification and validation of three profound lines – and discovery of a new line
Vibeke S. Elbrønd1 and Rikke M Schultz2

1 Ass. Prof. Anatomy, DVM, Ph. D, IVH, Faculty of Health & Medical Sciences, Copenhagen University, Denmark, vse@sund.ku.dk
2 DVM, RMS Equine Practice, Karlebovej 22, 2980 Kokkedal, Denmark, rms@rikkeschultz.dk

Background
Myofascial kinetic lines balance the body in motion and standing and are important tools when diagnosing locomotion dysfunctions. Thomas Myers define 10 lines in human [1]. In horses seven of these lines were dissected and published [2]. Compared to human the equine lines vary due to the difference in posture, biped versus quadruped. Three lines still need to be dissected and validated in horses: Two equine profound front limb lines, PFLL, and a deep ventral line (DVL). The three lines are important since they balance external versus internal. Based on clinical experiences an equine deep dorsal line (DDL) is missing in this balance.

The purpose of this study was to dissect and validate the equine DVL, DFLL and DDL.

Methods
Ten horses of different breed and gender were euthanized due to reasons not related to this study, dissected, imaged and video recorded. The horses were treated with respect to national and international rules of animal welfare.

Results
Two DFLL slings were dissected in the brachial and antebrachial regions i) the front limb abduction line (FLAbL), holding structures of abduction, supination and closely connected to the Retraction Line, and ii) the front limb adduction line (FLAdL) holding structures of adduction and pronation and connected to the Protraction Line. A DVL very similar to the human was verified. The line spanned from the insertion of the profound flexor tendon in the hindlimb to the base of the cranium, including profound, hypaxial structures and organs in the abdomen, thorax and neck. A new line, DDL, was identified. It comprised epaxial, intrinsic myofascial structures from head to tail and to the dura mater. Both the DDL and the DVL include coccygeal myofascia and skull periosteum.

Conclusion
Four equine profound lines, DVL, DFAbL, DFAdL and DDL were verified. The DFLL (FLAbL and FLAdL) supported the oscillation of the front limb around the pivot point at the upper third of the medial surface of scapula. DDL explains a profound body balance with not only DVL but also all other lines and confirm the three-dimensional equine fascial network of great clinical and biomechanical importance.

References

Figure legends

Fig. 1. Horse front limb. Transverse tension fibers on the m. biceps brachii, indicate a pro- and supination movement of the brachium.

Fig. 2. Transverse section of an equine tail at cocc 2. The DDL is represented in the mm. sacro-cocc. dorsalis and the DVL with the ventral m. sacro-cocc. ventralis.