Summer 2020

The Role of Spine in Causing Lameness in Horses

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Raja Zabeeh Ullah Khan-Fulbright Cohort 2020-Syracuse University VEGS Summer 2020

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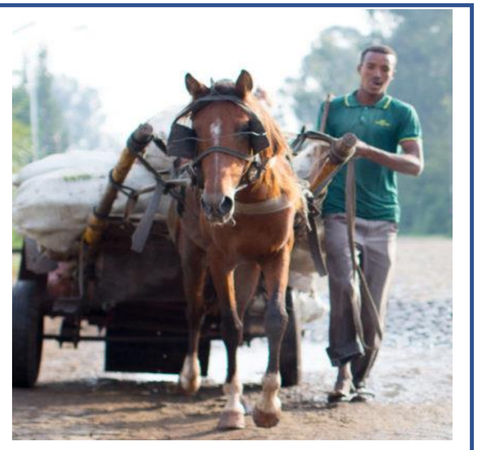
Abstract: Lameness is one of the most important problems of horses. It influences all communities who keep horses. Recent studies have shown the significance of spinal muscles and vertebrae in inducing lameness in horses. The field has not been explored much and requires application of biomechanics to define the role of spine in inducing lameness in horses. This presentation highlights the importance of spine in inducing lameness in horses by relating the solution with biomechanics

Introduction: Lameness in horses is among the major problems that have economic and welfare implications. A recent study showed that there can be multiple pathologies in musculoskeletal system of horses that lead to lameness and limb and spinal pathologies hold significant importance. 16% horses showed pain during spinal manipulation and it was concluded that contribution of spinal pain in inducing lameness was around 9.4% (Broster et al., 2009). In another study it was concluded that changes in spinal musculature can lead to bony changes which in turn produce pain perception (Stubbs et al., 2010). It is also very important to connect the biomechanical aspects of normal musculoskeletal system with lameness and other joint and muscle abnormalities for clearer understanding of the problem. (Janeczek et al., 2014) did a similar study in horses to highlight the importance of association of spinal anatomy with biomechanics to study association of pain with thoraco-lumber vertebral fusion. These studies indicate that the importance of spinal muscles and vertebrae in inducing lameness in horses should be explored through a biomechanical lens with the aim of finding a more effective means of prevention.



FigA:https://fotoeins.com/2013/01/10/hongkong-hkjc-happyvalley/

Fig B: https://spanajobs.org/about-spana/brown-horse-pulling-cart-in-ethiopia/

Horses are equally important for the rich and the poor

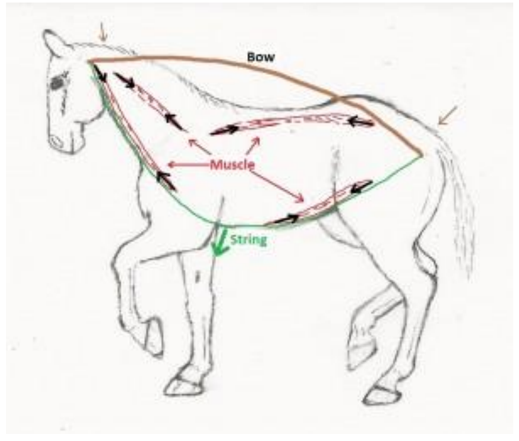
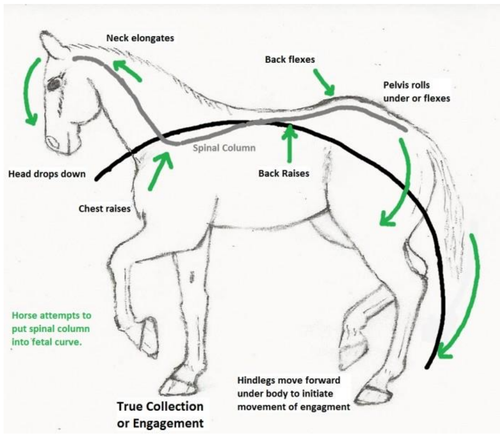


Fig.C: Horse locomotion is a bow and string type motion in which has significant contribution form spine,

https://wagnerhorsedoc.com/2016/04/equine-biomechanics-locomotion/



FigB: Horse locomotion is a complex coordination among body muscles including spinal muscles.

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Conclusion:

- Horse locomotion involves neck, spinal, abdominal and limb muscles whereas lameness is a problem that occurs when any of these set of muscles does not perform its function.
- Significance of muscles in locomotion is understood by studying their anatomy and their biomechanics.
- In past, all the lameness studies were based on limb and specially hoof anatomy and biomechanics.
- Study of lameness can never be complete unless spinal anatomy is taken into consideration.