

Using sEMG To Assess Equine Core Muscles Activity

Objective

The aim of the study was to use **surface electromyography (sEMG)** to objectively measure activity differences in m. longissimus dorsi (LD) and m. rectus abdominus (RA) while performing three levels of spinal flexion and lateral bending, as well as comparing thoracic and pelvic lift exercises in nine adult sport horses, and the kinematics of lumbo-sacral joint during core strengthening exercises.

Results

In conclusion, the RA has been proved to be highly targeted with spinal flexions, lateral bending and thoracic lifts. Pelvic lift exercises are beneficial in flexing the lumbo-sacral joint, which is paramount for joint health and horse performance. Core strengthening exercises should be recommended as routine for core strengthening, helping in injury prevention, as well as part of rehabilitation protocols.

The results provide a guideline of the level of muscle effort required in relation to each exercise.

Evidence-based approaches and objective outcome measurements in equine rehabilitation are of major importance, so the use of non-invasive **surface electromyography** technology to assess muscle function is an important tool. **sEMG** has been used to assess the different therapeutic exercises effects on core muscles, such as pole work, elastic resistance bands, and Pessoa training aids.

Participants and Researchers

The studied population consisted of nine horses, four mares and six geldings (age: 12.3 ± 4.94 years old) including Irish sport horses, warmbloods and thoroughbreds. All horses were training and/or competing in dressage or show jumping.

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Methods

The study compared muscle activity (**sEMG**) and lumbosacral flexion when performing different core strengthening exercises. Dynamic Mobilisation Exercises (DME) and myotatic reflex exercises were developed with the aim of improving core strengthening in horses. Three repetitions of each exercise was performed for five seconds. **Surface electromyography (sEMG)** was used to record muscle electric activity, while sagittal lumbo-sacral flexion was measured with kinematics analysis.

The dual-channel sEMG **NeuroTrac MyoPlus2 Pro** (Verity Medical) was used alongside its dedicated computer software for analysis of the left m. rectus abdominis (RA) and left lumbar m. longissimus dorsi (LD) activity.

The full abstract can be found at

<https://www.sciencedirect.com/science/article/pii/S2949905423000026#:~:text=Overall%2C%20the%20RA%20showed%20the,on%20the%20lumbo%2Dsacral%20joint.>