

Effect of chiropractic manipulations on the kinematics of back and limbs in horses with clinically diagnosed back problems

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Abstract:

Reasons for performing study: Although there is anecdotal evidence of clinical effectiveness of chiropractic in treatment of equine back pain, little scientific work has been reported on the subject.

Objectives: To quantify the effect of chiropractic manipulations on back and limb kinematics in horse locomotion.

Methods: Kinematics of 10 Warmblood horses were measured over ground at walk and trot at their own, preferred speed before, and one hour and 3 weeks after chiropractic treatment that consisted of manipulations of the back, neck and pelvic area. Speed was the same during all measurements for each horse.

Results: Chiropractic manipulations resulted in increased flexion-extension range of motion (ROM) ($P < 0.05$) at trot in the vertebral angular segments: T10-T13-T17 (0.3°) and T13-T17-L1 (0.8°) one hour after treatment, but decreased ROM after 3 weeks. The angular motion patterns (AMPs) of the same segments showed increased flexion at both gaits one hour after treatment (both angles 0.2° at walk and 0.3° at trot, $P < 0.05$) and 3 weeks after treatment (1.0° and 2.4° at walk and 1.9° and 2.9° at trot, $P < 0.05$). The lumbar (L3 and L5) area showed increased flexion after one hour (both angles 0.3° at walk and 0.4° at trot $P < 0.05$), but increased extension after 3 weeks (1.4° and 1.2° , at trot only, $P < 0.05$). There were no detectable changes in lateral bending AMPs. The inclination of the pelvis was reduced at trot one hour (1.6°) and 3 weeks (3°) after treatment ($P < 0.05$). The mean axial rotation of the pelvis was more symmetrical 3 weeks after the treatment at both gaits ($P < 0.05$). There were no changes in limb angles at walk and almost no changes at trot.

Conclusions: The main overall effect of the chiropractic manipulations was a less extended thoracic back, a reduced inclination of the pelvis and improvement of the symmetry of the pelvic motion pattern.

Potential relevance: Chiropractic manipulations elicit slight but significant changes in thoracolumbar and pelvic kinematics. Some of the changes are likely to be beneficial, but clinical trials with increased numbers of horses and longer follow-up are needed.