

Horseshoeing styles comparison and detection of subclinic equine digit discomfort during movement

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Introduction: For the sound equine forelimb, ground reaction force (GRF) peaks to ~0.8-1 BodyWeight (BW) during the trot (4m/s). Little work investigates the effect of different horseshoeing styles, directly on the limb GRF distribution and indirectly on the equine digit comfort during movement. This study investigates GRF distribution after application of different aluminium horseshoeing styles during movement.

Methods: Two horses (H1,H2; mean 575kg) were used. However H2 had an old healed flexor tendons lesion, the horses were judged to be sound on locomotor examination (without lameness). According to the rules that respect the foot biomechanical balance, they were trimmed and shod with a non-broken foot-pastern axis. On the day of the tests, they were led on a treadmill at a trot (4m/s). Kinetics were collected, using a F-Scan system, during 3 following sessions : to both forehooves after application of classic roller, eggbar and equi+ horseshoes. For each session, data from 3 strides for each left forelimb of each horse were averaged and kinetics (GRF) were obtained.

Results: For the classic roller, eggbar and equi+ horseshoes, GRF peaked respectively to 0.57±0.006;0.36±0.005;0.83±0.009BW for H1 and 0.61±0.007;0.84±0.007;0.51±0.009BW for H2. These horseshoes loading differences show a dynamic load transfer from the forelimbs to the hindlimbs, that is the result of a subclinic (without lameness) equine digit discomfort during movement.

Conclusions: Subclinic equine digit discomfort after application of horseshoes has been detected using the F-Scan system during movement. These results confirm the interest of the equi+ horseshoes on horses without flexor tendon lesion.