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CURRENT CONCEPTS ON BIOMECHANICS OF THERAPEUTIC FARRIERY

Given the link between the external shape of the hoof capsule and its internal function, trimming and shoeing should optimise functionality and ultimately reduce stress, in the prevention of injury as well as in the treatment of established pathology. For centuries, farriery has been a craft relying merely on tradition, personal experience and empirical evidence. Over the last decades, an increasing number of studies has provided insight in key concepts of hoof biomechanics. Unfortunately, there is still a lack of high-quality evidence-based research on trimming and shoeing for specific orthopaedic pathologies. Notwithstanding the current availability of several objective and quantitative tools (e.g. inertial sensor systems, optical motion capture, pressure plates), randomised controlled clinical trials of therapeutic farriery are still lacking, and therefore, individual assessment and clinical judgment remain of fundamental importance. The effect of track composition and its maintenance on shock dampening and hoof slip may be at least equally important in the treatment of orthopaedic pathologies, and affects the selection of horseshoe modifications (e.g. wedges vs. extensions). Any trimming or shoeing should be tailored to the individual case, and should be based on a thorough static and dynamic evaluation of hoof balance, a full diagnostic work-up of any pathology, and adapted to the specific requirements for the chosen sport discipline. Based on the biomechanical aspects of the hoof-ground interaction, farriery can be focused on: (1) Optimising hoof balance; (2) Shock dampening during the initial impact phase; (3) Appropriate hoof slip/braking during the secondary impact phase; (4) Optimal pressure distribution during the support phase; (5) Optimising breakover; (6) Optimising the hoof mechanism. Ideally, several of these principles are already applied in the prevention of injury.^{1,2} The goal should always be to find the simplest solution that meets the objectives.

References

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