The role of extracorporeal shockwave therapy in the rehabilitation of soft tissue injuries in the equine athlete

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Shockwave therapy has become an established tool to assist in the management of soft tissue injuries in athletic horses. The initial application was for proximal suspensory desmitis (Boening 2000) and whilst the suspensory ligament remains the most commonly treated site, its use has now broadened into other areas.

EXPERIMENTAL STUDIES
McClure et al (2004) studied the effects of shockwave therapy in a collagenase-induced model of suspensory desmitis of the forelimb. They demonstrated an improved rate of healing as assessed ultrasonographically. Histologically the treated suspensory ligaments had a more concentrated area of metachromasia associated with healing than the untreated ligaments.

A number of experimental studies have examined the affect of extracorporeal shockwaves on tendons. Rompe et al (1998) demonstrated dose-dependent changes in the tendon and paratenon of rabbits, showing that high intensity treatments could lead to marked histological changes. Beneficial affects of shockwaves had been shown experimentally in a traumatic model in the rat Achilles tendon (Orhan et al 2004) and in a collagenase-induced model in the rabbit patellar tendon (Hsu et al 2004). Wang et al (2003) demonstrated increased neovascularisation associated with the early release of angiogenesis-related markers at the Achilles tendon/bone junction in rabbits.

The mechanisms of shockwave therapy in promoting tendon healing have been studied by Chen et al (2004). Rats with collagenase-induced Achilles tendinitis demonstrated increased TGF-beta1 and IGF-1 expression following shockwave treatment. Kersh et al (2004) studied extracorporeal shockwave therapy in an equine collagenase model. The results were initially reported as encouraging but subsequently it was claimed that extracorporeal shockwave therapy did not change the ultrasonographic appearance of the tendons when compared to untreated controls, however it did increase neovascularisation. As ever, there have to be concerns over the accuracy of collagenase-induced lesions as a model for naturally occurring tendonitis

CLINICAL EXPERIENCES
• Proximal suspensory desmitis – I have found treatment of chronic, active forelimb proximal suspensory desmitis to be extremely rewarding in alleviating pain and permitting horses to continue competing. Unfortunately the success rate for shockwave treatment of hindlimb proximal suspensory desmitis is not as high. I have found it fairly ineffective in severely lame horses and now reserve its use for mild and acute cases. Overall our success rates are comparable with those published by Crowe et al (2004). With repeated treatments it can be used to successfully manage poor performance due to mild chronic active proximal desmitis. It also appears helpful in the management of suspensory branch desmitis including those with an entheses component involving the proximal sesamoid bones.
• Extracorporeal shockwave therapy is my current treatment of choice for mild or chronic cases of superficial digital flexor tendonitis. In clinical cases I will see a quicker ultrasonographic resolution of the lesion, and in comparison to other treatments a more rapid development in longitudinal fibre pattern. Adverse reactions are extremely rare, especially in comparison to tendon injections. We have shown a decrease in the recurrence rate in Event horses (20%) and National Hunt racehorses (47%), using the same criteria to compare to the results of conservative treatment (43% and 56% respectively) reported by Dyson (2004).
• The analgesic actions of shockwave therapy can be beneficial in the treatment of back problems. This can include impingement of the dorsal spinous processes, caudal thoracic arthropathy, supraspinous ligament strains and non-specific soft tissue pain. I feel that it is best employed as the plane of exercise is increased especially using lunging and long reining exercise to encourage muscle development over the back without the weight of a rider. After a course of three treatments the analgesic effect will often last five months or so. Some horses will have worked through the problem by this stage or others may require repeat treatments. In some horses there is a failure to respond.
REFERENCES


