

Extracorporeal Shock Wave Therapy

What is extracorporeal shock wave therapy?

Extracorporeal shock wave therapy (ESWT) is a **method of applying energy waves to hard or soft tissue in a particular area of the body**. Developed for human use in breaking up kidney stones, the technique has been adopted by veterinarians **to reduce pain and stimulate healing** in some types of injuries. “Extracorporeal” refers to the fact that the **treatment is given from outside the horse’s body**, in contrast to oral medications, injections, or surgery that are considered more invasive.

Two types of shock wave machines, focused and radial, are available. **Focused waves can be directed at a particular point** and can penetrate further through soft tissue, while **radial waves impact a larger but more shallow area**. Because there is little tissue overlying most limb bones and joints, it is believed that radial waves have sufficient energy to reach many targeted areas, and the radial machine’s significantly smaller size makes it somewhat easier to transport and use.

How is the treatment administered?

While a veterinary clinic can administer ESWT to inpatients, most practitioners take the therapy to their equine clients. **The horse remains standing in his stall and is usually lightly sedated** to keep him from moving excessively during the treatment. A veterinarian uses a **portable unit to generate high-pressure acoustic (sound) waves**. The apparatus is held against the injured area (bone, joint, tendon, or ligament) for about twenty minutes. A typical course of therapy involves **three treatments at three-week intervals**.

What happens to the tissues treated with this therapy?

While the exact mechanism is not yet known, ESWT commonly leads to **improved circulation** due to blood vessel dilation in and around the injured area. Growth of new blood vessels has also been recorded. Significant **pain relief** is almost immediately evident, although slight swelling and sensitivity may be noticed for a few days. ESWT also has a positive effect on the **concentration of transforming growth factor beta 1**, which stimulates cell activity. In addition, ESWT influences **bone remodeling** by thickening the outer layers and strengthening the cell network underlying joint cartilage.

What equine conditions are commonly treated by ESWT?

The best results have been seen in horses with **hock problems and proximal suspensory ligament injuries**. Stress fractures, ringbone, navicular syndrome, back pain, and tendon injuries have been treated with variable results.

How successful is this treatment?

In a study at Iowa State University, horses with **inflammation of the suspensory ligament** were treated with ESWT. The treated animals had a **decrease in lesion area, improved fiber alignment, and less swelling** than animals in a control group. A similar study in Germany compared ESWT with conventional treatment (rest, cold treatment, blistering, application of anti-inflammatory and steroidal products). Of the conventionally treated group, 50% of the horses returned to full work within six months, while **71% of the ESWT group were able to resume full work** in the same time period. In a third study group, horses with **bone spavin (degenerative arthritis of the hock)** were treated with ESWT. A **decrease in lameness was seen in 80%** of the treated horses.

If ESWT is so useful, why is there controversy regarding its use?

One effect of shock wave therapy is a transient numbing of the nerves in the treated area. The **numbness begins almost immediately after treatment** and subsides slowly during the next two to four days, with some loss of nerve conductivity still detectable up to three weeks later. Professionals worry that **horses raced or shown during this pain-free period may suffer more serious injuries, possibly falling and endangering riders and other horses.** Subtle movement changes caused by pain or injury are often a jockey's clues that a horse needs to be eased or pulled up before the injury leads to breakdown. Jockeys have voiced serious concerns that horses racing within a day or two of ESWT may not exhibit these telltale gait changes.

A number of states already have **regulations banning racing within seven to fourteen days following ESWT**, and Minnesota has completely disallowed its use. Enforcement is difficult, however, because horses show very little evidence that this therapy has been performed. While many tracks require trainers to register shock wave machines and report all treatments to the official track veterinarian, there is **virtually no way to be certain of how much time has elapsed since therapy was performed** on a particular horse.

What's the bottom line on extracorporeal shock wave therapy?

ESWT seems to be a **useful technique for treating some types of injury and lameness.** As with any treatment or therapy, irresponsible use can lead to problems. **A veterinarian can provide guidance about local regulations and the use of ESWT as a treatment option in a particular situation.**