VersaTron Use in Young Horses: Healing common conditioning and training injuries with high-energy focused shock wave technology
As summer approaches, it is time to start conditioning the yearlings. Optimizing the training at this stage is crucial to the performance of the horse through the years to come and to the value of the horse in the immediate future. There are a variety of training injuries that are commonly seen during the initial training stages and it is equally important to address these injuries appropriately and quickly.

While horses of any age need to be pushed in order to increase performance, there are frequent injuries associated with the stress of conditioning, which need to be aggressively treated. Certainly the types of injuries are dependent upon the breed and activity of the horse. The following is a list of common issues seen across a variety of disciplines including horse racing, hunter/jumpers, dressage, reiners, etc.

- Osteochondritis Dissecans (OCD) and Subchondral Bone Cysts
- Suspensory Ligament Desmitis
- Bucked Shins / Stress Fractures / Splints
- Fetlock Problems / Green Osselets

High-energy, focused, Extracorporeal Shock Wave Technology (ESWT) is a safe, efficacious and timely option for managing these conditions.

**ESWT Technology**

Safety is first and foremost the concern associated with any treatment, and even more so in young patients. During the last 10+ years of shock wave use for musculoskeletal conditions, the safety of the technology continues to be reaffirmed. Specifically, VersaTron® high-energy shock wave technology has been proven to be safe and effective when used at the proper energy settings, even in young horses. Numerous studies conclude that ESWT utilizing VersaTron is a safe treatment and that no damage occurs at the appropriate settings.1-6

**OCD & Subchondral Bone Cysts**

OCD is a common issue seen in yearlings and can be a difficult condition to treat. Arthroscopic debridement and other surgical options can be successful, but even minimally invasive techniques are associated with recovery periods and the potential for complications and additional structural injury. VersaTron shock wave treatments may provide a non-invasive alternative to successfully heal OCD lesions. A common contributing cause of OCD of any joint in any species is the loss of blood supply to the bone and cartilage. Shock wave technology has been proven to stimulate expression of angiogenic growth factors and induce neovascularization, thereby leading to regression of bone lesions as seen in histological evaluations and MRI screenings.7,8 Dr. Robert Cook (Woodford Equine, Versailles, KY) has reported excellent results for OCD applications with efficacy rates estimated to be at 90% for treatment in yearlings.9 Prognosis is also excellent for bone cysts in growing horses.10

**Suspensory Ligaments**

Suspensory ligament injuries are perhaps one of the most common injuries seen in equine medicine today and veterinarians report that it is the most common use for the VersaTron high-energy shock wave device.11 Focused, high-energy ESWT heals these injuries more rapidly and with better efficacy than alternative modalities.5 Dr. Larry Metheney (Phoenix, AZ) reports that shock wave treatment increases blood flow to areas of the lower limb such as the suspensory ligaments that have a limited blood supply, thereby decreasing healing times.10 In addition, early and sustained release of various growth factors including Proliferating Cell Nuclear Antigen (PCNA) following shock wave treatment leads to tissue regeneration and repair.7 ESWT significantly improves collagen fiber alignment during the repair process, which can help to prevent injury relapse.12

To optimize treatment of a suspensory ligament injury with ESWT, the injury must be treated at two areas; the area of the suspensory proximal and distal to the location where the suspensory divides into the medial and lateral branches. Dr. Metheney considers the outcomes for ESWT for this application to be excellent with the appropriate treatment protocol (see Figure 1). 10

<table>
<thead>
<tr>
<th>Entry Window</th>
<th>Probe</th>
<th>Energy Setting</th>
<th>Number of Shocks</th>
<th>Treatment Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximal Suspensory Ligament (proximal 1/3 of ligament)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Palmardorsal</td>
<td>R20 or R35</td>
<td>E4 to E6</td>
<td>500</td>
<td>10 days to 3 weeks</td>
</tr>
<tr>
<td>Medial and lateral</td>
<td>R05</td>
<td>E4 to E6</td>
<td>500 each side</td>
<td>10 days to 3 weeks</td>
</tr>
</tbody>
</table>

**Distal Suspensory Ligament**

<table>
<thead>
<tr>
<th>Entry Window</th>
<th>Probe</th>
<th>Energy Setting</th>
<th>Number of Shocks</th>
<th>Treatment Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial and lateral branches</td>
<td>R05</td>
<td>E4 to E6</td>
<td>800 each branch</td>
<td>10 days to 3 weeks</td>
</tr>
</tbody>
</table>
Bucked Shins / Stress Fractures / Splints
These forelimb injuries are common problems among race horses and are caused by the extreme stress generally put on young bones that are not yet fully conditioned. The degree of lameness, pain, and swelling is dependent upon the severity of the case, but at any level, these injuries can delay training and potentially impact the future success of the horse. High energy focused shock wave treatment speeds the recovery from these injuries, thereby decreasing the resting period and returning the horse to a sound state sooner. In an investigation of the mechanism of action of ESWT by Wang, et al, the results showed higher bone strength and bone mass in the ESWT treatment group vs. the control group. The protocol to treat these conditions is somewhat dependent upon the area affected; however Figure 2 lists general recommendations. Bucked shins and splints are often healed with one treatment, acute fractures with 1-2 treatments and old fractures with 3-4 treatments.

Green Osselets
This condition of the joint capsule in the fetlock is another issue that is very common as a result of the severe stress put on the forelimbs of many breeds during training. The hot, soft, inflammation associated with green osselets can lead to permanent damage of the cartilage and joint capsule so it is critical to address the symptoms immediately and prevent resulting new bone formation and spurs. Recent theory categorizes this condition as a cartilage injury that causes proliferation of the joint capsule and is therefore of arthritic nature. A report from the Colorado State University Orthopaedic Research Center previously demonstrated the significantly positive effects of ESWT vs. polysulfated glycosaminoglycan for improving lameness and the clinical signs of pain associated with induced osteoarthritis of the carpal joints. Additionally, a significant reduction in synovial fluid total protein was seen with ESWT. Further publication has documented the positive acute results for shock wave and long-term results of 24 months and beyond for arthritic conditions.

Dr. Metheney, reported a recent case in which he was able to successfully treat green osselets without the use of a joint injection. The 2 yr old was diagnosed with green osselets in addition to a small chip in the ankle at the proximal end of P1. Based on previous success with shock wave for tendon applications, the owner requested shock wave instead of an injection. The patient did "very very well" states Metheney. Dr. Metheney suggests that the horse be cooled down for 5-10 days prior to treatment and NSAIDS should not be used. He recommends administering 1-3 treatments of 1000 shocks with the R05 VersaTrode.

With the ten years of proven safety and efficacy, VersaTron ESWT has become the trusted technology of choice for many veterinarians and its indications for use continue to expand through scientific research and practical applications. When used as directed, VersaTron ESWT is a safe and reliable treatment for common injuries seen in young horses as a result of conditioning and training.
References: