



# Advancing Veterinary Shock Wave Therapy Through Evidence-Based Medicine

Over 15 YEARS of Unmatched and Ongoing Clinical Research

Sedation-free, noninvasive healing for your patients.

## Canine Treatment Areas

The PulseVet® shock wave technology has been clinically proven to enhance the quality and speed of healing in various musculoskeletal indications, such as:

- Ligaments • Tendons
- Osteoarthritis • Lick Granulomas
- LS Disease • Non-Union Fractures



SCAN ME

To learn more about the PulseVet system or set up a demo, call or click



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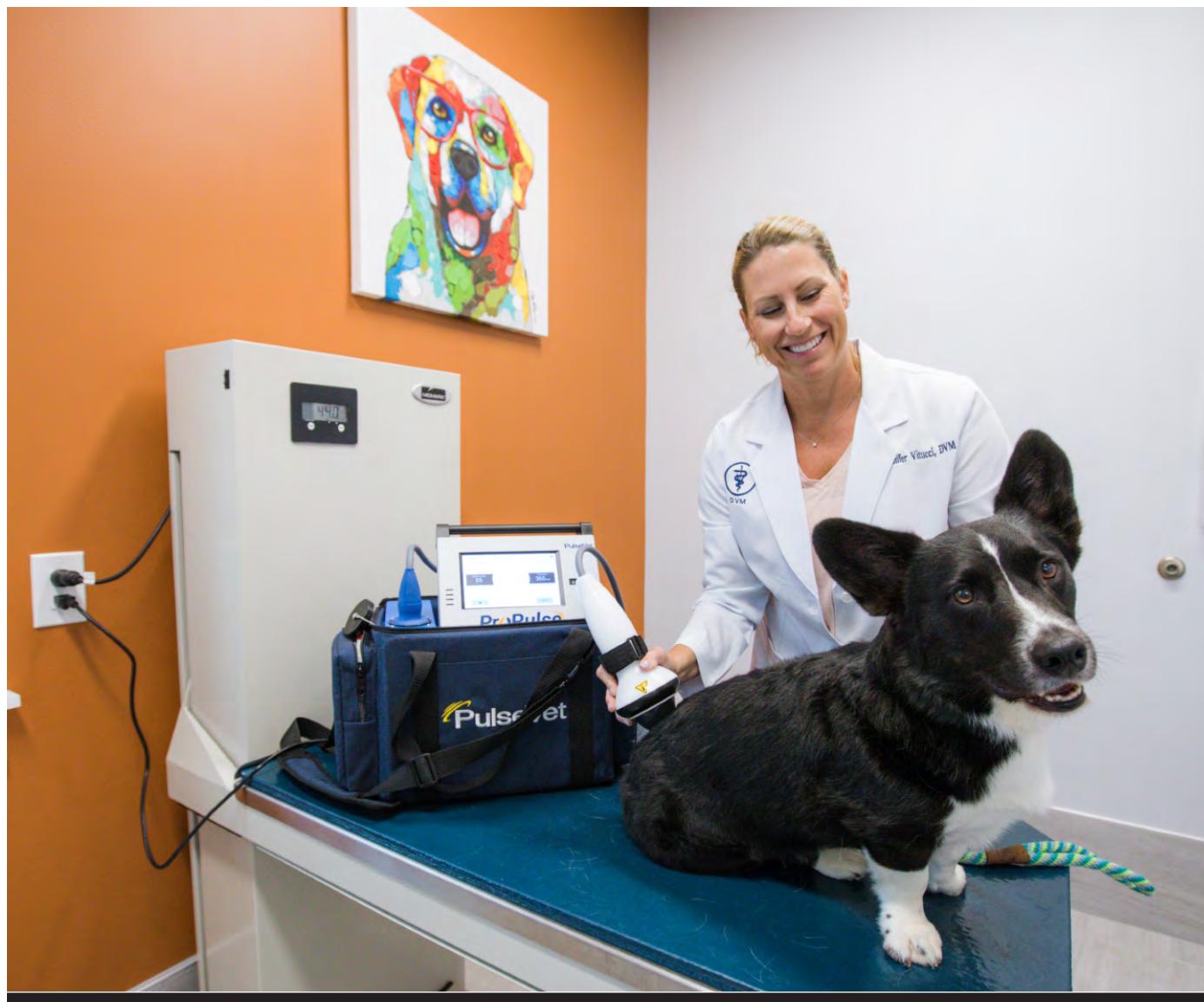
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*written by*

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Vitucci graduated magna cum laude from John Carroll University with a biology degree. She obtained her DVM from The Ohio State University in 2007. After graduation, she moved to the St. Louis, Missouri, area and practiced at a small animal general practice for 2 years, before purchasing County Animal Hospital with her husband in October 2009. Vitucci began her rehabilitation training in 2019 and obtained her canine rehabilitation therapist certification through the Canine Rehab Institute in 2021. Synergy Veterinary Rehabilitation opened within County Animal Hospital in 2019. After selling their practice and moving to the Florida panhandle, Vitucci joined PulseVet Technologies as the small animal business manager in May 2021.



# New shock wave technology needs *no* sedation

Small animals can now benefit from an effective treatment for injuries and chronic pain.

**N**oninvasive medicine is becoming increasingly popular among pet owners as they seek alternative and advanced therapies, irrespective of cost, to improve the quality of life of companion animals. By offering a clinically proven, safe, and sedation-free solution to intractable conditions and injuries—tendon tears, nonhealing fractures, lick granulomas, osteoarthritis, chronic pain, and so on—clinics can enhance their reputation, boost their bottom line, and deliver better patient care.

For more than 20 years, shock wave therapy has been the standard of care for chronic pain and tendon/ligament injuries in equine medicine, but not in small animal medicine because of the need for sedation it previously entailed. With the launch of the X-Trode by PulseVet, a device that provides quick and effective relief without anesthesia, the technology may soon become a staple of all vets.

Imagine walking into your practice right now and telling clients that there is a noninvasive, regenerative modality that takes only 3 to 5 minutes per treatment area, requires just 1 to 3 treatments, and is covered by most pet insurance policies. Do you think they would be interested?

## WHAT IS IT?

When people hear the term *shock wave*, they often think of electrical shock. However, a shock wave is simply a fast, energy-carrying sound wave. Although applied externally, these waves can travel through living tissue and induce biological changes that modulate inflammation, decrease pain, and promote healing.<sup>1-4</sup>

## ITS HISTORY

Shock wave therapy was first used to break up kidney stones in humans (lithotripsy). Early research showed that shock wave energy accelerated bone growth, a fact that motivated investigators to evaluate its effects on other tissue. This work ultimately led to its application in the treatment of musculoskeletal disorders and the introduction, in 1999, of EquiTron, the first veterinary shock wave device. The smaller, more convenient VersaTron was launched in 2002, and equine shock wave therapy took off.

## GENERATING SHOCK WAVES

There are 3 types of shock wave generators: electrohydraulic, electromagnetic, and piezoelectric. Electrohydraulic devices are capable of producing the greatest peak energy and largest focal area. Electromagnetic and piezoelectric devices generate less energy and deposit it in a smaller focal area. Both of these generators were developed to disintegrate renal calculi without damaging the surrounding tissue and are considered true shock wave generators only at high-energy settings. In addition, radial pressure wave devices are also frequently marketed as shock wave generators, but they use mechanical energy (as does a small jackhammer) and do not produce a true shock wave.

## HOW DOES IT WORK?

Shock wave therapy is applied superficially, and its focused, high-energy sound wave is released when it reaches an area of high acoustic impedance, such as a bone-tendon interface or the surface of a cell. This energy causes cells to exude an array of anti-inflammatory, angiogenic, and osteogenic proteins that modulate inflammation, increase blood supply, and lead to bone formation. Cytokines are released that return chronic conditions to the acute stage to initiate the healing process. Angiogenic growth factors are secreted that improve functional capillary density, allowing for a greater blood supply to the area and thus promoting healing.<sup>1-4</sup> Bone morphogenetic protein is released to stimulate osseous regeneration.<sup>3,4</sup> Shock waves also improve the fiber alignment in tendons and ligaments for improved quality of healing.<sup>1,2</sup>

In 2021, PulseVet released the X-Trode, a hand-piece that broadens the focal area and deposits the energy across a larger volume of tissue, reducing treatment-associated discomfort. This advance makes it possible for dogs and cats to comfortably receive treatment without being sedated.

## WHAT ARE THE INDICATIONS?

There are more than 20 evidence-based treatments for equine and canine indications, including tendon and ligament injuries, bone and wound healing, osteoarthritis, and chronic pain.

## INJURIES TO TENDONS AND LIGAMENTS

Shock wave therapy has been proven to decrease inflammation and increase fiber alignment in tendons and ligaments. Supraspinatus tenosynovitis and injuries to biceps and the Achilles tendon have been successfully treated with shock waves.<sup>2,5</sup> In a study performed at Seattle Veterinary Specialists, 87% of dogs with biceps or supraspinatus tendinopathies (particularly moderate-to-severe cases) had a good or excellent outcome after 1 to 3 treatments. The median follow-up time was 95 months. All patients received shock wave therapy without complications.<sup>5</sup> In a prospective study of patellar ligament desmitis after tibial plateau levelling osteotomy (TPLO), shock wave significantly decreased ligament thickness compared to the control group.<sup>6</sup>

## OSTEOARTHRITIS AND NON-NEUROLOGIC BACK PAIN

Shock wave therapy has become an integral part of a multimodal approach to osteoarthritis management. By reducing inflammatory cytokines within the joint, cartilage degradation decreases (due to inhibition of chondrocyte apoptosis), thus it has been shown to manage pain symptoms and slow the progression of the disease.<sup>7</sup> At the University of Tennessee in 2010, 15 dogs with end-stage elbow osteoarthritis were assigned to receive 2 shock wave treatments or placed in a sham group. Those in the shock wave group showed significant improvement in peak braking and peak propulsion and had an

increase of 4.5% in peak vertical force (PVF) compared with the sham group's PVF decrease of 2.6%.<sup>8</sup>

For non-neurologic back pain, another study on 38 dogs and 2 cats showed a median lasting improvement of 13.5 months after a single treatment of the lumbosacral area.<sup>9</sup> Of the 87% of patients that had a positive outcome, 77% showed results within one week.<sup>9</sup> Clinical research is ongoing, with a lumbosacral pain study currently being conducted at The Ohio State University small animal veterinary hospital, sponsored by the Morris Animal Foundation.

## CHRONIC WOUNDS

Shock wave therapy is now approved for the treatment of diabetic ulcers in humans and has been shown to improve skin flap healing.<sup>10,11</sup>

## BROKEN BONES

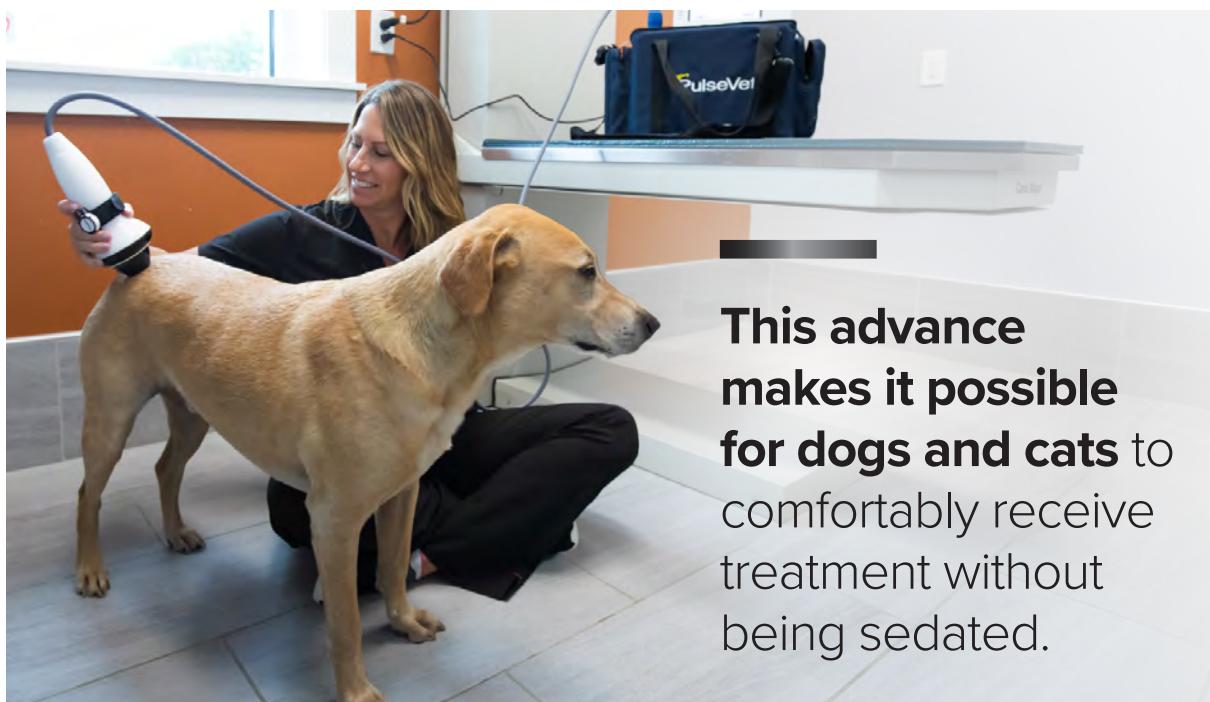
A study of 3 dogs showed that shock wave therapy accelerated the healing of fractures and osteotomies and was particularly effective for use in delayed union or trophic nonunion fractures. In these dogs, whose delayed union or nonunion was present more than 15 weeks after TPLO surgery, a single shock wave treatment resulted in complete union after 12 weeks.<sup>12</sup> Another study showed shock wave treatments accelerated bone healing after TPLO. Patients received 2 shock wave treatments, the first immediately after surgery and the second 2 weeks later. Healing at 8 weeks was significantly higher in patients receiving treatment than in those in the sham group. All shock wave patients were considered completely healed at 8 weeks, compared with only half of those in the control group.<sup>13</sup>

## TREATMENT PROTOCOL

For optimal energy transmittal, ultrasound gel is applied to the canine epidermis. (Dogs with thick coats may need to have their hair clipped.) Treatment takes from 3 to 5 minutes per area, and most patients require no sedation. Indications require a total of 1 to 3 treatments, 2 to 3 weeks apart. No major adverse effects and very few contraindications have been reported. Shock wave therapy is safe, effective, and easy to incorporate into practice.

## WHY OFFER IT?

Shock wave therapy is clinically proven by more than 20 years of published clinical research to be safe and effective. It is easy to use; training of veterinary technicians is straightforward for the 5-minute treatment. Because it only requires between 1 and 3 treatments, practice workflow is not impacted, providing substantial cash flow and profitability for the practice. Most of all, it is great for pet patients. ©



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