



EXTRACORPOREAL SHOCK WAVE THERAPY (ESWT) INVOLVING THE MUSCULOSKELETAL SYSTEM PATIENT EDUCATION AND AFTERCARE

WHAT IS ESWT?

Extracorporeal Shock Wave Therapy or ESWT is a non-surgical procedure for chronic musculoskeletal pain, chronic plantar fasciitis, Achilles tendonitis, tennis elbow, shoulder tendonitis, and other chronic tendinopathies. ESWT is also referred to as Radial Shock Wave Therapy (RSWT), Extracorporeal Pulse Activation Therapy (EPAT), Radial Pressure Wave Therapy (RPAT), and Acoustic Wave Therapy (AWT). ESWT is frequently used in physiotherapy, osteology, and sports medicine.

Lithotripsy, a similar shock wave therapy procedure, is used regularly for breaking up and dispersing kidney stones. When urologists found that patients who had the kidney stone procedure presented with increased bone density and new tissue growth, we realized the possibilities of shock wave therapy for the musculoskeletal system.

ESWT is used internationally for conditions all over the body. In the United States, an FDA study was performed for patients who suffer from chronic plantar fasciitis with or without the presence of a heel spur. The results were an amazing average reduction in pain of 92% with only one treatment.

ESWT benefits patients because their condition can be treated extracorporeally, meaning outside of the body. Because the treatment is non-invasive many of the expenses and risks of surgery are eliminated.

HOW DOES ESWT WORK?

During ESWT, a high intensity acoustic wave interacts with the tissues of the body. The biological effects include mechanotransduction at the cellular level, chemical responses, and complex tissue changes. This leads to a cascade of beneficial effects including neovascularization (formation of new blood vessels), changes in nerve cells, reduction of chronic inflammation, stimulation of collagen production, and dissolution of calcium deposits in tendons and muscle. Stimulation of these biological mechanisms creates an optimal healing environment. As the injured area heals, function is restored, and pain is relieved.

Pinecone Physio utilizes the Medray Medwave Acoustic Wave Therapy system, an FDA approved, non-surgical therapy device. The Medwave allows for the treatment of indications with radial, pneumatically generated, low-energy acoustic waves, or 'pressure pulses.' The applied pressure pulse propagates radially within the tissue, generating a therapeutic effect. The hand piece contains a projectile that is accelerated through the electromagnetic transfer of kinetic energy. This kinetic energy is then transformed into impact energy in the applicator head. The impact energy delivered from the applicator head emits high energy pulses. The series of high energy acoustic wave pulses are directly applied from the applicator head to your skin via a gel medium.

HOW DOES ESWT FEEL?

ESWT is a non-invasive, non-surgical treatment, but you might feel a little pain or discomfort in the treatment area during the procedure. Most patients say it feels like pulses against the skin. Your specialist may be able to adjust the way they use the shockwave device if your pain is significant. Each session will only last a few minutes, so the vast majority of patients are able to tolerate the levels of discomfort caused by shockwave therapy.



WHAT DOES ESWT HELP?

Scientific studies have shown that when applied to an area, ESWT increases blood flow, by stimulating the growth of new blood vessels (neovascularization) and growth factors, enhancing tissue growth and repair. ESWT involving the musculoskeletal system is specifically intended for the treatment of:

- Chronic Tendinopathies
- Calcifying tendinopathy of the shoulder
- Lateral epicondylopathy of the elbow (tennis elbow)
- Greater trochanter pain syndrome
- Patellar tendinopathy
- Achilles tendinopathy
- Plantar fasciitis, with or without heel spur
- Rotator cuff tendinopathy
- Medial epicondylopathy of the elbow
- Adductor tendinopathy syndrome
- Pes-Anserinus tendinopathy syndrome
- Peroneal tendinopathy
- Foot and ankle tendinopathies
- Trigger Finger
- Bone Pathologies
- Delayed bone healing
- Bone Non-Union (pseudarthroses)
- Stress fracture
- Avascular bone necrosis without articular derangement
- Osteochondritis Dissecans (OCD) without articular derangement
- Osgood Schlatter disease: Apophysitis of the anterior tibial tubercle
- Tibial stress syndrome (shin splint)
- Knee Osteoarthritis
- Muscle Pathologies
- Myofascial Syndrome
- Muscle Sprain
- Dupuytren disease
- Plantar fibromatosis (Ledderhose disease)
- De Quervain disease
- Trigger finger
- Neurological Pathologies
- Spasticity
- Carpal tunnel syndrome
- Polyneuropathy

Other indications of ESWT include:

- Pelvic Health Pathologies
- Pelvic chronic pain syndrome (abacterial prostatitis)
- Erectile dysfunction
- Skin Pathologies
- Delayed or non-healing wounds
- Skin ulcers
- Non-circumferential burn wounds
- Cellulite



WHEN SHOULD I CONSIDER ESWT?

If you have had your condition for **more than six months** and have tried **at least three conservative therapies** with limited results, don't wait. Continuously using degenerative tendon tissue can cause further damage. When the condition progresses to a rupture, ESWT is no longer an option, and you will have no treatment alternative but invasive surgery.

Additionally, if left untreated, you can experience new problems. As an example, if you have heel pain in your foot you may naturally compensate by walking on your toes or limping to protect yourself from pain. These abnormal movements will, in time, cause strain to your knees, hips and lower back, or even worse, may result in the same condition in the other foot. Compensation problems occur whenever you have chronic pain left untreated.

If your pain has just begun, you may be able to avoid ESWT by early intervention of other types of treatments. Please feel free to call us and we will recommend a specialist who can help evaluate your treatment needs.

IS ESWT FOR EVERYONE? ARE THERE RISKS?

ESWT is a valuable and effective treatment for musculoskeletal pain. Like any treatment, there are contraindications and possible complications. Complications are rare in occurrence and are expected to subside after 5-10 days. Complications include mild bruising, swelling, pain, numbness or tingling in the treated area, and the recovery is minimal compared with that of surgical intervention. Contraindications include:

- History of a blood clotting disorder
- History of **thrombosis (blood clots, stroke, heart attack)**
- Taking blood thinners or anticoagulants
- History of cancer, tumor diseases, or malignancies
- Pregnancy
- Polyneuropathy in case of diabetes mellitus
- History of osteomyelitis
- Acute inflammation or pus in the treatment area
- Children in growth, open growth plates
- Metal pins or plates in the treatment area
- **History of tendon rupture in the treatment area**
- **Implanted electrical device (pacemaker, DBS) in the treatment area**
- Cortisone therapy within the last 6-12 weeks
- Steroid therapy within the last 6-12 weeks

It is also recommended that you have not taken non-steroidal anti-inflammatory (NSAID) painkillers such as ibuprofen for any reason in the 2 weeks prior to ESWT for optimal results. The reason is anti-inflammatories may reduce the ESWT treatment biological effects of neovascularization (formation of new blood vessels), changes in nerve cells, stimulation of collagen production, and dissolution of calcium deposits in tendons and muscle. Stimulation of these biological mechanisms is what creates the optimal healing environment and NSAIDs can reduce the effect. If you are taking NSAIDs for pain or inflammation, there may be other treatments that relieve your pain and also allow you to try ESWT. Please talk to our specialists to evaluate your treatment needs.



WHAT IS THE INITIAL ESWT RECOVERY?

After ESWT you will be able to go home and return to work and your normal daily activities straight away. You should avoid repetitive, high impact, and high torque movements such as running or playing tennis for the first 48 hours after treatment. **Avoid taking a non-steroidal anti-inflammatory painkiller such as ibuprofen as it will counteract the treatment and render it useless.** In the days following shockwave therapy, you may experience swelling and redness in the treated area. This can make your pain feel worse, but this is indicative of the healing process, is completely normal and will subside within a day or two.

After the initial 48 hours, it is recommended you resume activities and follow a structured therapeutic, functional exercise program for 12-16 weeks. This will include therapeutic education, activities, corrective exercises, and can be completed independently after instruction. Additional recommended treatments may include Class IV laser therapy, spinal decompression, functional dry needling with or without electrical stimulation, blood flow restriction therapy, neuromuscular re-education, and manual therapy.

WHAT IS THE LONG TERM ESWT RECOVERY?

ESWT forces your body to create new tissue cells in the damaged area. Expect gradual healing to take place over days, weeks or months. **Most will have noticeable improvement after the first 2-4 treatments and will continue to see a significant improvement through the 12-16 weeks after treatment.** **Corticosteroid therapy is absolutely contraindicated during this time.** Optimal improvements occur with your commitment to proper functional exercises, reduced use of NSAIDs, proper nutrition, and hydration during this time. A second bout of treatment in the same area may be necessary in approximately 20% of patients. As it took time to create the injury, healing also takes time. **Continued healing of the area can continue up to one year after ESWT.** The best thing about ESWT is that unlike surgery, you avoid getting worse before getting better. You do not need to plan lengthy time off from work or your life for painful post-procedure recovery.

HOW MANY SESSIONS WILL I NEED?

Typically, patients experience positive results within 1-6 sessions per treatment area, but can vary depending on the cause and duration of the symptoms, overall health of the patient, and experience level of the practitioner.

HOW MUCH DOES ESWT INVOLVING THE MUSCULOSKELETAL SYSTEM COST?

The cost is an add on to your appointment time: \$60 each treatment, or 6 treatments for \$270, plus the cost of your initial evaluation. Additional recommended treatments may include Functional Dry Needling, Class IV Laser Therapy, and therapeutic activities. Health insurance often covers evaluations, therapeutic exercises, neuromuscular re-education, and therapeutic activities. ESWT, Functional Dry Needling, and Class IV Laser Therapy are usually not covered by health insurance.

Contact us for more information or for a consultation today.

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