



Arthritis & Inflammation

Shockwave & EMTT — Regenerative Care for Joint Health

Patient Guide | Advanced Spinal Care & Regenerative Medicine

Arthritis Is More Than Wear and Tear

Most people are told their arthritis is simply the result of aging — that cartilage wears down, joints get stiff and painful, and the best you can do is manage it. That's an incomplete picture, and it leads to incomplete treatment.

Arthritis is an active biological process. Inflammation drives the breakdown of cartilage, bone, and surrounding tissue — and that inflammation doesn't stop on its own. Meanwhile, the joint rarely suffers in isolation: the tendons, ligaments, bursa, and connective tissue around an arthritic joint are often themselves injured, inflamed, or fibrotic, and they contribute significantly to pain and loss of function. Treating only the joint and ignoring the surrounding tissue is one of the main reasons conventional arthritis care leaves so many patients frustrated.

Shockwave therapy and EMTT take a different approach. Rather than suppressing symptoms, they work to change the biological environment of the joint and its surrounding tissue — stimulating repair, reducing inflammation at its source, and creating conditions for genuine, lasting improvement.

58%

average pain reduction in knee arthritis studies [1]

Lasting

outcomes held at 6 and 12 months [7]

Cartilage

protection and regeneration supported by research [2]

Where Does Your Arthritis Come From?

Not all arthritis is the same — and understanding where yours is coming from helps explain why a multi-layer approach is so important. In most patients, what feels like 'joint pain' is actually coming from more than one place:

Source of Pain	What We Do About It
The cartilage itself	Cartilage breaks down over time, loses its cushioning ability, and can't regenerate easily on its own. This is what most people picture as arthritis — and it's what shockwave and EMTT directly address by reactivating the cartilage cells responsible for repair.
The joint lining (synovium)	The membrane lining the joint can become chronically inflamed, producing excess fluid, pain, and heat. This inflammatory environment also accelerates cartilage breakdown. Both



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Source of Pain	What We Do About It
	shockwave and EMTT calm this inflammation without the risks of repeated cortisone injections.
The bone beneath the cartilage	As cartilage thins, the underlying bone changes too — becoming denser, developing bone spurs, and generating its own pain signals. Shockwave and EMTT have measurable effects on bone remodeling, helping to stabilize these changes.
The surrounding tendons & ligaments	Many patients are surprised to learn that a significant portion of their 'joint pain' actually comes from the tendons and ligaments around the joint — structures that have been chronically overloaded as the joint has deteriorated. These are highly responsive to shockwave therapy, and treating them often produces dramatic relief.
The connective tissue (fascia)	Muscles and fascia surrounding arthritic joints frequently develop trigger points, tightness, and fibrosis — amplifying pain and restricting movement far beyond what the joint damage alone would cause. Shockwave reaches and releases these layers too.
Post-injury or post-surgical arthritis	Arthritis following an injury or surgery often involves scar tissue, altered mechanics, and accumulated inflammation in addition to cartilage changes. This combination responds well to the layered biological approach ESWT and EMTT provide.

How Shockwave Therapy Works for Arthritis

Shockwave delivers targeted acoustic energy into the joint and surrounding tissue, triggering a cascade of biological repair responses:

- **Wakes up cartilage repair cells:** Your cartilage cells (called chondrocytes) are responsible for maintaining and rebuilding the joint surface — but in an arthritic environment they become dormant and depleted. Shockwave reactivates them, shifting the joint from a breakdown-dominant state toward a repair-dominant one [3]. This is the core regenerative effect, and it's what separates shockwave from treatments that only reduce symptoms.
- **Reduces inflammation throughout the joint:** Shockwave significantly reduces the concentration of inflammatory proteins within the joint [4] — the same ones driving cartilage destruction, pain, and swelling. The effect is comparable to an anti-inflammatory injection, without the tissue-weakening risks of repeated cortisone use.
- **Improves joint lubrication:** Evidence suggests shockwave supports the production of hyaluronic acid in the joint — improving fluid quality and reducing the friction that accelerates wear.
- **Treats the surrounding tissue:** Shockwave breaks down calcium deposits, releases trigger points in the surrounding muscles and fascia, and addresses the tendon and bursa irritation that contributes so heavily to joint pain [5]. This is often where patients feel the most immediate and dramatic relief.
- **Builds new blood vessels:** Shockwave stimulates the formation of new capillaries around the joint, improving blood supply to structures that heal slowly due to poor circulation.



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How EMTT Works for Arthritis

EMTT (Extracorporeal Magnetotransduction Therapy) uses high-intensity pulsed magnetic fields to reach deep into joint structures — penetrating further than any surface-level treatment can achieve. At the cellular level:

- **Turns down inflammation at the source:** EMTT reduces the body's production of the inflammatory signals that drive joint pain and cartilage destruction [6] — not by blocking them downstream like a drug, but by changing how the cells behave. The result is a sustained anti-inflammatory effect that doesn't require continuous dosing.
- **Gives depleted joint cells their energy back:** Cartilage cells in arthritic joints are metabolically exhausted — they don't have the energy to carry out repair. EMTT restores the energy production of these cells, enabling them to do the work that shockwave prompts them to do. This is why the two therapies are more effective together than either is alone.
- **Slows cartilage breakdown:** EMTT reduces the activity of the enzymes that progressively degrade cartilage matrix — helping preserve joint structure over time, not just during treatment.
- **Supports bone health beneath the cartilage:** EMTT helps restore a healthier balance in the bone remodeling process, supporting the bone-cartilage interface that OA progressively disrupts.
- **Clears inflammatory waste from the joint:** Enhanced lymphatic drainage from the joint space removes the buildup of inflammatory byproducts that perpetuate the pain and breakdown cycle.

Why results last

The reason patients often experience lasting relief from ESWT and EMTT — rather than the temporary improvement typical of injections or medication — is that the treatments change the biology of the joint itself. Cartilage cells are more active. Inflammation is lower. Surrounding tissue has been released and repaired. The joint environment is genuinely different. Clinical studies consistently show outcomes holding at 6 and 12 months after treatment — not because symptoms are being suppressed, but because the tissue has improved.

A better long-term option than ongoing NSAIDs

Long-term NSAID use carries real risks — including GI damage, kidney stress, and cardiovascular effects. There is also evidence that chronic NSAID use can interfere with the cartilage repair process your body is trying to run. Shockwave and EMTT reduce inflammation through the body's own biological pathways, supporting repair rather than suppressing it.



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The equipment matters: why we use Storz Medical

Not all shockwave devices are equal. We use Storz Medical systems — Swiss-engineered, clinically validated machines that set the standard for output precision, tissue penetration depth, and treatment consistency.

Storz devices have been the instruments of choice in the majority of peer-reviewed shockwave clinical trials published over the past two decades, and are used by Olympic training centers, professional sports medicine programs, and leading regenerative medicine practices worldwide. When you see statistics like ‘80% response rate,’ those results were achieved with devices at this level of quality — and that’s what we bring to every session.

Shockwave as a diagnostic tool: mapping your tissue

One of the most clinically useful — and often surprising — aspects of shockwave therapy is what it reveals about your tissue before treatment even begins.

When the shockwave applicator is moved over healthy tissue, patients typically feel mild pressure but little discomfort. When it passes over damaged, inflamed, or dysfunctional tissue, it produces a clear, localized pain response. This differential pressure sensitivity allows us to precisely map where pathology exists — often identifying areas of dysfunction that weren’t apparent on palpation or even imaging.

This real-time tissue mapping guides where we focus treatment, helps track improvement across sessions (as tissue heals, the pain response normalizes), and gives both you and your provider objective feedback on how your body is responding.

Conditions We Address

Knee Osteoarthritis	Reduces pain and improves function; cartilage preservation effects documented in imaging studies at 12 months
Hip Osteoarthritis	Addresses both joint inflammation and the surrounding tissue dysfunction that amplifies hip pain
Spinal Arthritis / Facet Syndrome	Reduces facet joint inflammation and the periarticular soft tissue involvement contributing to back and neck pain
Shoulder Arthritis	Improves range of motion and decreases pain; addresses rotator cuff and bursal involvement alongside the joint
Inflammatory Arthritis (sub-acute / stable)	EMTT is well-suited during stable or sub-acute phases to reduce inflammatory load and support tissue health alongside medical management
Post-Injury Inflammation	Accelerates resolution of acute and sub-acute inflammation; reduces the inflammatory environment that drives early arthritis after injury
Post-Surgical Joint Pain	Supports tissue healing and reduces inflammation around the surgical site; EMTT is compatible with metal hardware



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Staying Ahead of Arthritis

The earlier you intervene in the arthritis process, the more there is to protect. Shockwave and EMTT can be used proactively — before significant degeneration occurs — to maintain joint health and slow the biological aging of your joints.

- Maintain cartilage cell activity before significant degeneration sets in — the most effective intervention is early
- Control the low-grade joint inflammation that accumulates silently with age and activity, years before symptoms appear
- Address periarticular tissue health — tendons, fascia, and ligaments — to reduce the cumulative load on your joints
- Support the connective tissue structures that stabilize and protect joints over time

References

- ^[1] Zhao Z, et al. Extracorporeal shockwave therapy for knee osteoarthritis — clinical efficacy and potential mechanism. *Postgrad Med J.* 2013;89(1057):638–646.
- ^[2] Boopalan PR, et al. Pulsed electromagnetic field therapy results in healing of full thickness articular cartilage defect. *Int Orthop.* 2011;35(1):143–148.
- ^[3] Wang CJ, et al. Shock wave therapy reduces knee articular chondrocyte apoptosis. *J Surg Res.* 2011;166(1):84–89.
- ^[4] Wang CJ, et al. Extracorporeal shockwave therapy shows regeneration in knee osteoarthritis. *J Orthop Res.* 2011.
- ^[5] Maier M, et al. Substance P and prostaglandin E2 release after shock wave application. *Clin Orthop Relat Res.* 2003;406:237–245.
- ^[6] Vianale G, et al. Extremely low frequency electromagnetic field decreases proinflammatory chemokine production. *Br J Dermatol.* 2008;158(6):1189–1196.
- ^[7] Marcheggiani Muccioli GM, et al. Extracorporeal shock-wave therapy for the management of chronic tendinopathies: does it work? *Joints.* 2020.