

Radial Shockwave Therapy Therapeutic Guide

Extracorporeal Shockwave Therapy How it Works

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What is Extracorporeal Shockwave Therapy?

- Shockwave therapy is a non-invasive method that uses acoustic waves to treat musculoskeletal conditions.
- Extracorporeal = outside of the body.
- Shockwave = short, intense energy waves traveling faster than the speed of sound.
- It's a well-controlled mechanical insult to the tissue.
- Fast pain reliever and restores mobility.



History

In 1983 the first commercial lithotripter, the Dormier lithotripter was used.



Since 1985 other organs, such as the gall bladder, bile duct, pancreas, and salivary glands have been treated with shockwave.



During the following years, shockwave machines were trialed and have been used to treat orthopedic disorders, including pseudo-arthritis, osteochondrosis, and various tendinopathies, Erectile dysfunction, and cellulite reduction.

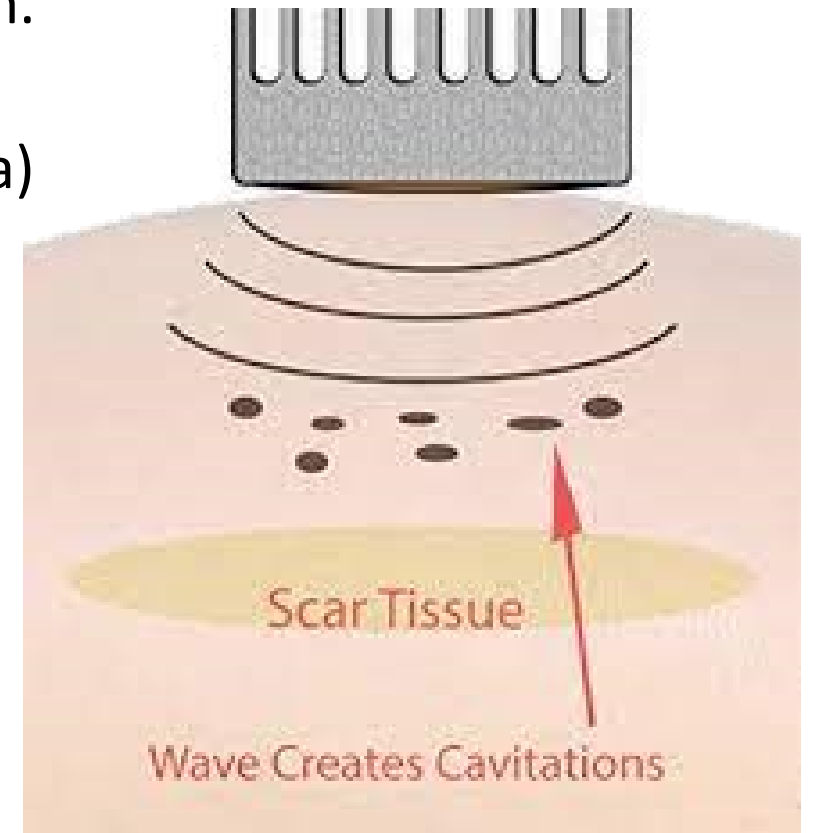
Shockwave Theory

- Extracorporeal Shockwaves (ESWT) are pressure waves generated acoustically.
- Shockwaves are different from other acoustic waves because they are at a lower frequency.
- There are many examples of these sonic pulse waves in real life. A more day to day version of a shockwave is those created by clapping.
- Jet fighter plane breaking the sound barrier which generates an audible bang and can lead to the breakage of glass in distant areas.



Cavitation Leads to Tissue Destruction

- Acoustic Waves create compression and shear loads on the surface of the tissue.
- This rapid interaction between compression and shear forces results in what is commonly referred to as cavitation.
- Cavitation is a formation of vapor bubbles in molecules. This cavitation causes damage to the tissue. (micro-trauma)



2-Fundamentally Different Types of Shockwaves

- **Focused:**

- Hard Shockwave (high energy) often referred to as lithotripsy.
- A focused shockwave is created from a wide arc at the surface. The focusing mechanism directs each shock to a defined point within the body.
- This concentrates the energy at this point to an extremely high level, requiring more technical guidance from the clinician.

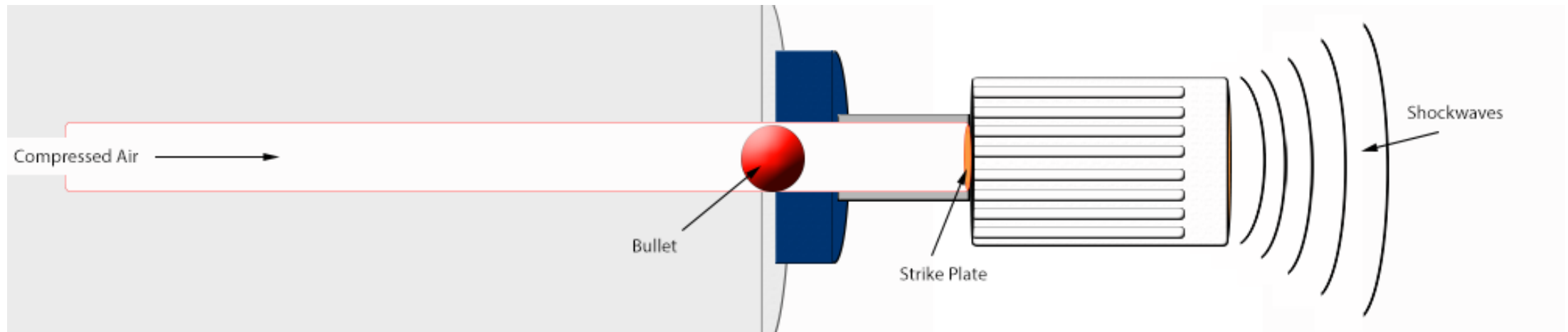
- **Non-Focused:**

- Radial, or dispersive soft wave.
- Radial or dispersive shockwaves are created by mechanical concussion that creates expanding acoustic waves away from the transmitter head which travel forward into the body. These waves rapidly reduce in force after their generation.
- Radial shockwave requires little technical guidance and is the most used device in treating musculoskeletal conditions, (less cost, less maintenance)

Radial Shockwaves are Generated in 2-Main Ways

Air compressed pneumatic system.

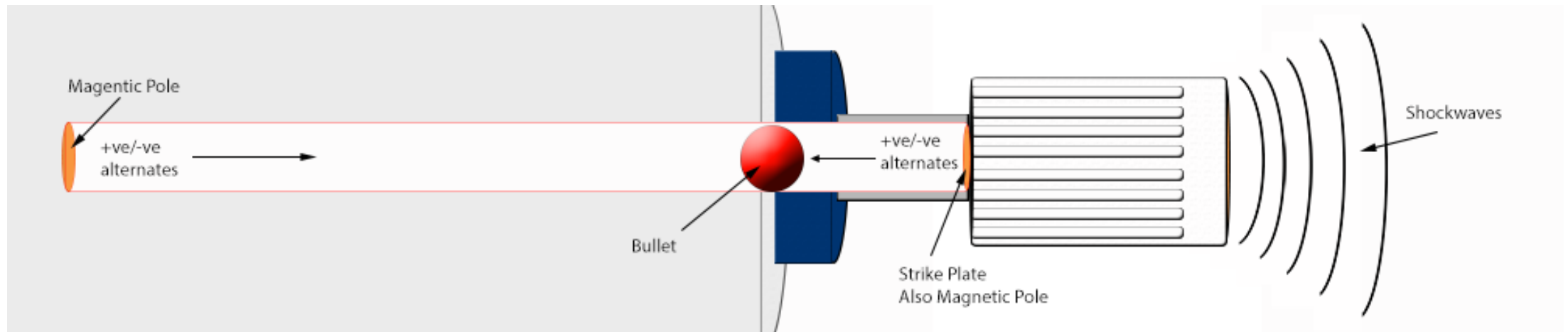
Here a bullet in a barrel is accelerated using compressed air to strike an end plate generating the shockwave. These machines are characterized by requiring an air compressor and their shockwave generation is normally referred to in terms of pressure e.g 3.0 bar. Produces more powerful shocks than Electromatic.



Radial Shockwaves are Generated in 2-Main Ways

Electromagnetic.

Here a bullet in a barrel is accelerated using alternating magnetic fields causing the bullet to strike an end plate creating the shockwave. These machines are characterized by their shockwave energy being described in terms of actual energy in millijoules e.g. 120mJ.



Radial Shockwaves are Generated in 2-Main Ways

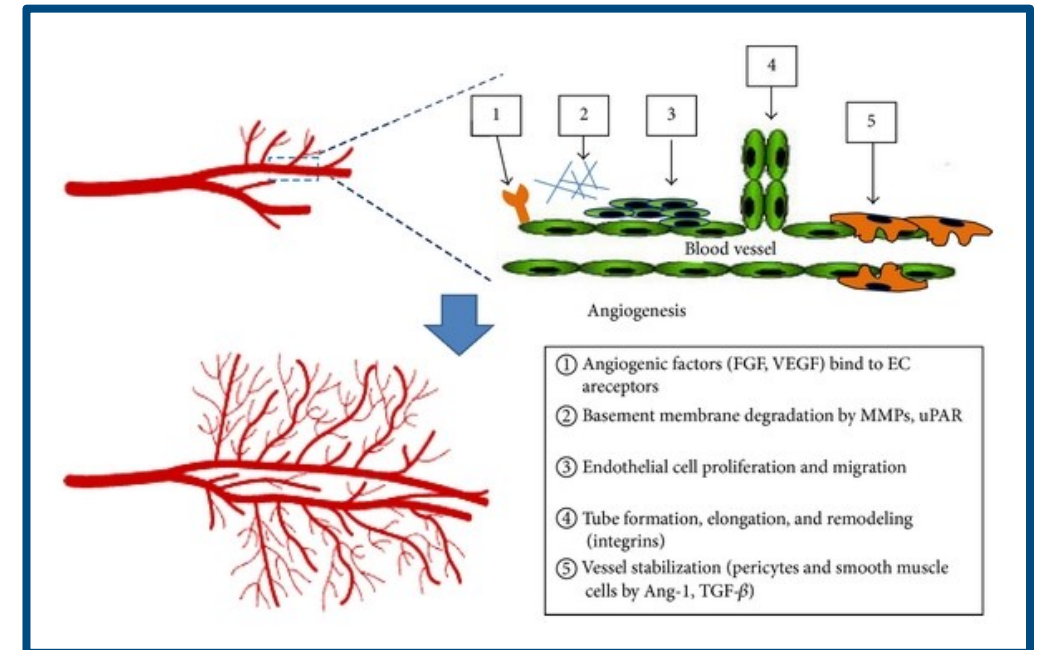
As the way shockwaves are produced differs fundamentally the measurements used to describe the energy they produce also differs.

Below is a chart showing approximations of the energy delivered:

Compressed Air	Magnetic	Energy per mm using 15mm head
bar	mJ	mJ/mm ²
1	60	
2	90	
3	120	0.12
4	150	
5	180	0.38

Broader Effect of ESWT

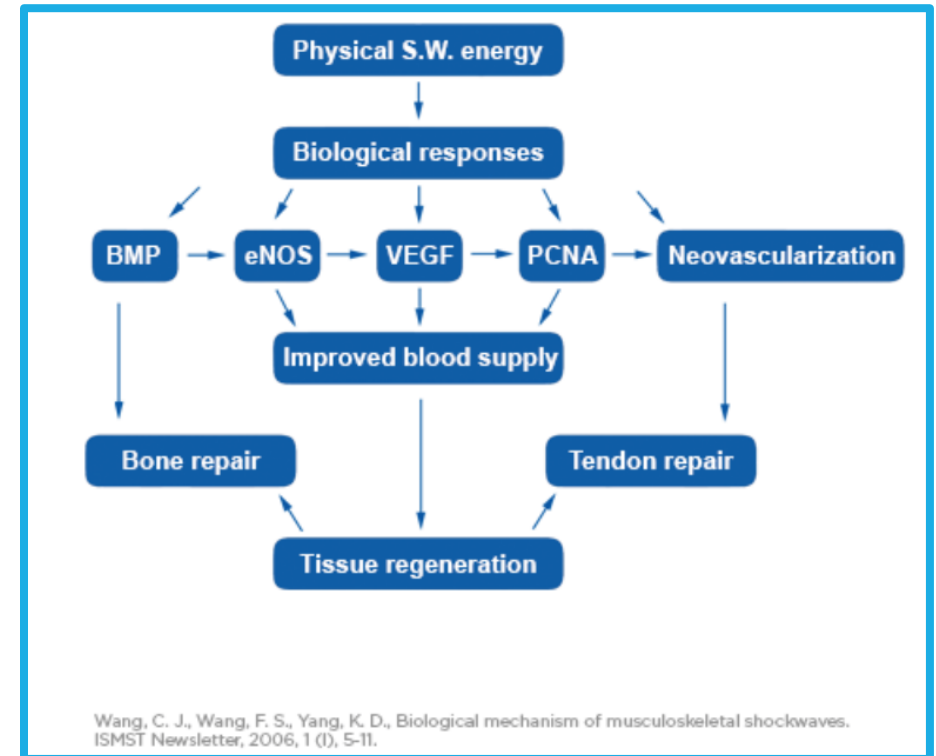
- Destruction of Tissue
- Increase Healing / Blood Supply (angiogenesis)
- Pain Reduction



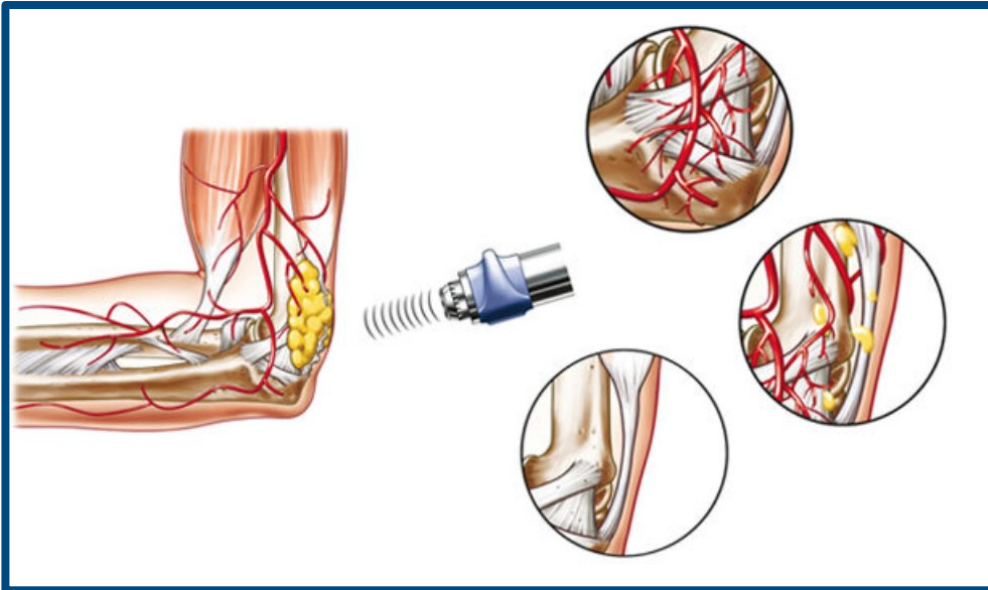
Medical Effects of ESWT

New Blood Vessel Formation

- Nutrient blood flow is necessary to start and maintain the repair processes of damage tissue structure.
- The application of Acoustic Waves creates capillary micro-ruptures in tendon and bone.
- Due to micro-ruptures the expression of growth factors such as, eNOS, VEGF, PCNS, and BMP is significantly increased.
- As a result of these processes, arterioles are remodeled, stimulated to grow, and new ones are formed.
- The new blood vessels improve blood supply and oxygenation of the treated area and support faster healing of both the tendon and the bone.



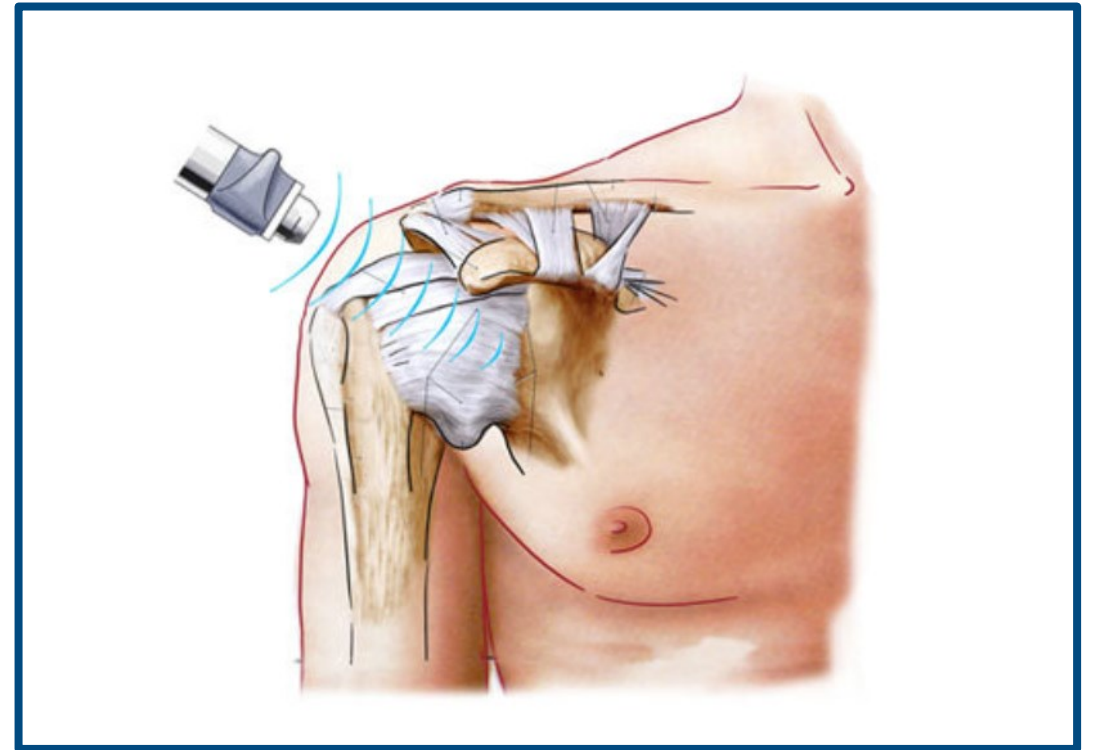
Reversal of Chronic Inflammation



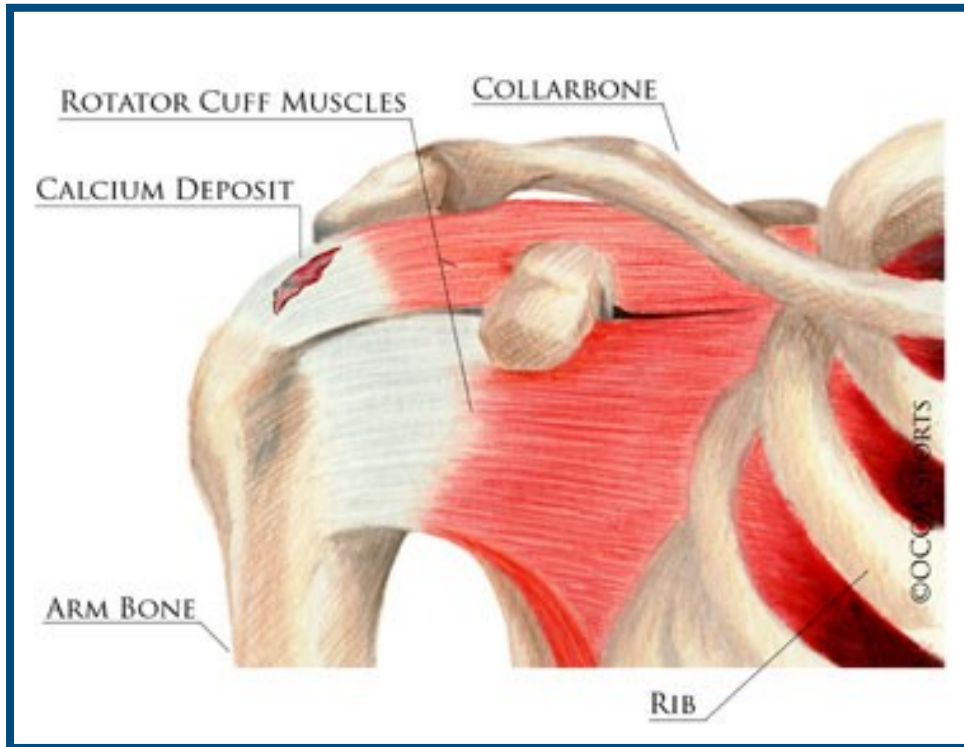
- Chronic inflammation occurs when the inflammatory response is not completely halted. It can damage healthy tissue and result in chronic pain.
- Mast cells are one of the key components of the inflammatory process. Their activity may be increased by using pervasive acoustic waves.
- Mast cell activation is followed by the production of chemokines and cytokines.
- These pro-inflammatory compounds first enhance the inflammatory process and in the next step help restore normal healing and regenerative processes.

Stimulation of Collagen Production

- The production of a sufficient amount of collagen is a necessary precondition for the repair processes of the damaged myoskeletal and ligamentous structures.
- Shockwave therapy accelerates procollagen synthesis. The therapy forces the newly created collagen fibers into a longitudinal structure which makes the newly formed tendon fibers denser and stiffer, to create a firmer structure.



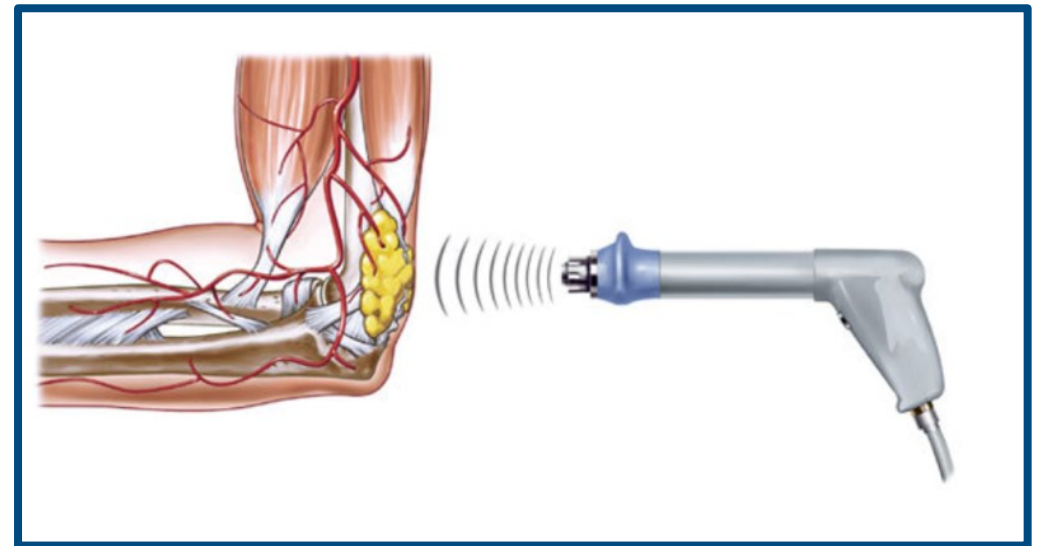
Dissolution of Calcified Fibroblasts



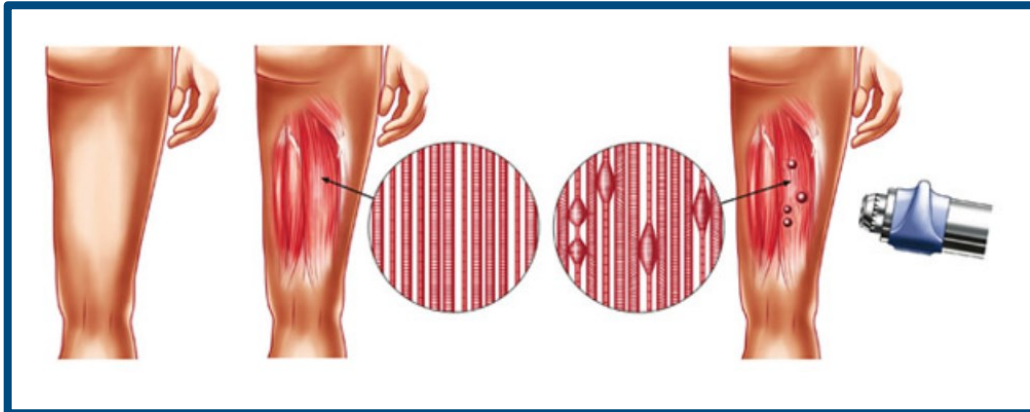
- Calcium build-up is most often a result of micro-tears or other trauma to a tendon. Acoustic waves break up the existing calcifications.
- Shockwave therapy starts the biochemical decalcification of the calcium build-up to a toothpaste-like consistency and treats the tendon.
- The granular particles of calcium are then removed by the lymphatic system.

Dispersion of Pain Mediator “Substance P”

- Substance P is a neurotransmitter that mediates pain information through C-fibers.
- This neuropeptide is generally associated with intense, persistent, and chronic pain. It relays pain messages to the central nervous system.
- Lowering the concentration of Substance P reduces the stimulation of afferent nociceptive fibers and thus reduces the pain.
- Decreasing Substance P, histamines and other nociceptive metabolites also helps inhibit development of inflammatory oedema.
- Acoustic waves generated by Shockwave therapy lower the Substance P concentration and trigger pain relief.



Release of Trigger Points



- Trigger points are the principal cause of pain in the back, neck, shoulder, and limbs.
- They are associated with palpable nodules in taut bands of muscle fibers and have extremely contracted sarcomeres.
- The dysfunctional sarcomeres contract so tightly that they begin to cut off their own blood supply.
- This causes the waste products to build up. Waste product build-up irritates the sensory nerve endings which then causes even more contraction.
- This vicious cycle is referred to as “metabolic crisis”. The assumed mechanism of action is that the delivered acoustic energy unblocks the calcium pump and thus reverses the metabolic crisis in the myofilaments and releases the trigger points.

Conditions Treated

1. Ankle: Achilles Tendon
2. Arm: Golfer's Elbow
3. Arm: Tennis Elbow
4. Arthritis: Knee Arthritis
5. Back: Lower Back Pain
6. Back: Upper Back Pain
7. Foot: Morton's neuroma
8. Foot: Gout
9. Hand: Wrist Carpal Tunnel
10. Heel: Heel Spur
11. Heel: Plantar Fasciitis, Bone spur
12. Hip: Greater Trochanteric Pain – Bursitis
13. Jaw: TMD
14. Knee: Jumpers Knee
15. Knee: ACL Recovery
16. Leg: Hamstring
17. Lymph Nodes: Lymphedema
18. Neck: Multiple Pain Conditions
19. Osgood: Schlatter Disease
20. Shoulder: Calcified Tendonitis
21. Spine: Spinal cord injury, Scoliosis, Sacroiliitis, Coccydynia
22. Optional Treatment: Body: Cellulite
23. Optional Treatment: Sexual Wellness: Erectile dysfunction





SWT-2500 Dual Radial Shockwave Device

Benefits

- Low Cost compared to other Pneumatic Radial Shockwave Devices
- Low monthly Payment
- Quick ROI
- Brings in new patients
- Gives existing patients relief from chronic pain
- Gives your practice a renewed sense of purpose
- High Quality German engineered
- Easy operation
- Low maintenance cost
- 3-yr. warranty
- 50-Patient Shockwave Brochures
- 20-Tutorial videos
- 5-hr training video course with certificate
- 10" Tablet w/Holder for Portal
- Shockwave Education Portal
- Treatment Guidance Portal
- Clinical Trials Portal
- User & Maintenance Manual



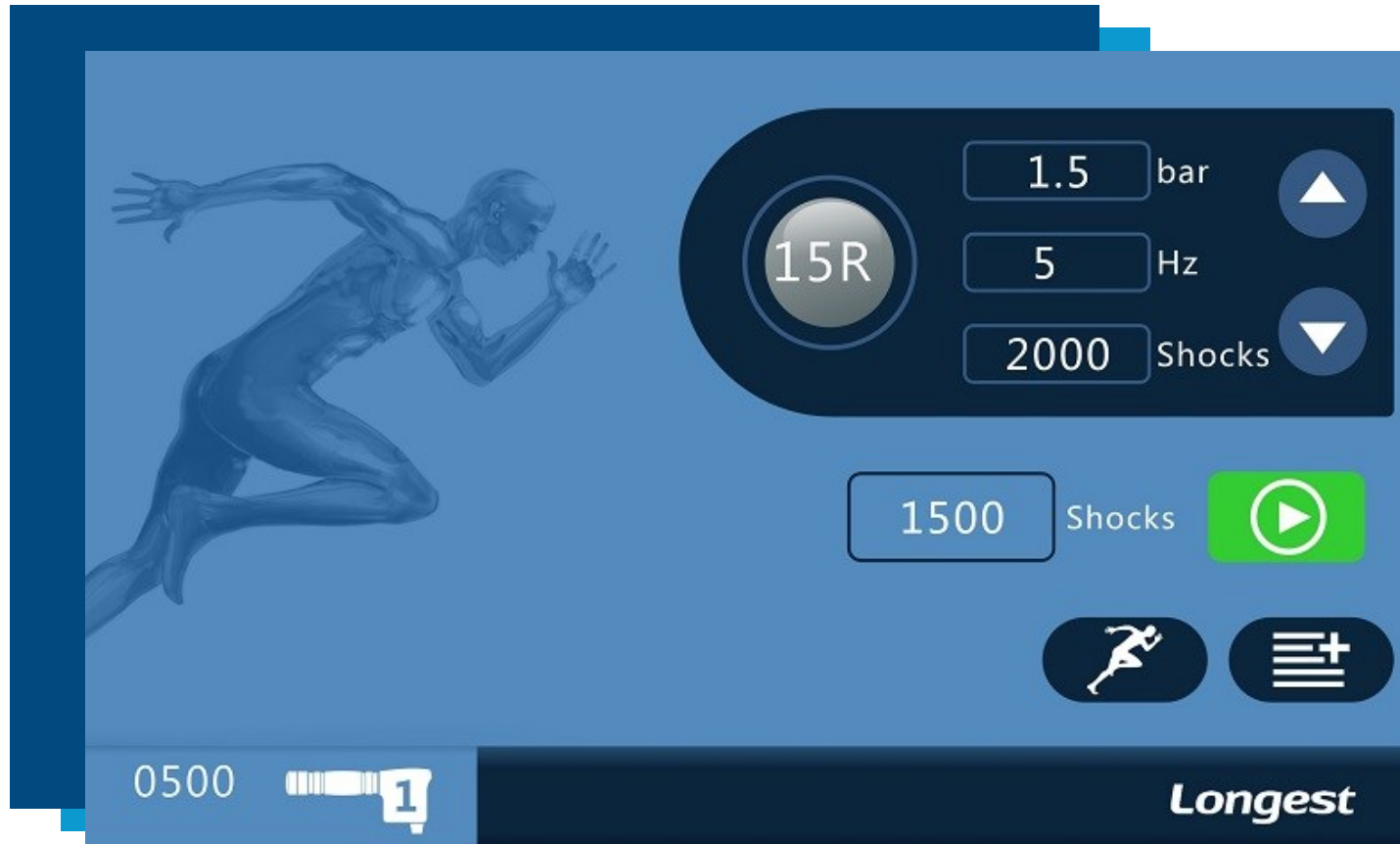
Features

- Dual-channel design
- Pre-programmed protocols
- Silent built-in air compressor
- Vibration handpiece for muscle relaxation
- 3-Tier Work Cart
- 3-Transmitter heads
- 10" Tablet w/Holder for Education and Guidance Portal
- 7" color touch screen
- 10 languages support
- Ergonomic handpiece, 2-million shocks tested
- Rapid software update via USB port
- Support user file PDF download
- Certificates: CE, FDA, HC, TGA, NRTL, ISO 13485, MDSAP, CFS



Features

Easy Treatment Setting Touch Screen



Features

Comfortable Ergonomic Handpiece



Features

Easy Working Grip



Features

Six Transmitter Heads to Treat Muscleskeletal, Erectile Dysfunction, and Cellulite conditions



Features

Simple Low-Cost Maintenance



Features

Periodic Brush Cleaning and Lubrication of the Bullet Tube



Features

Work Handle and Transmitter Head Plastic Case



Features

10" Tablet with Mounting Bracket for Educational Tablet



Tablet Features

Shockwave Education and Treatment Guidance Tablet

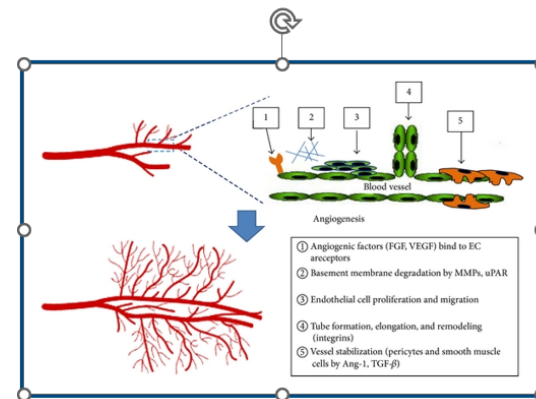


Tablet Features

How Shockwave Works

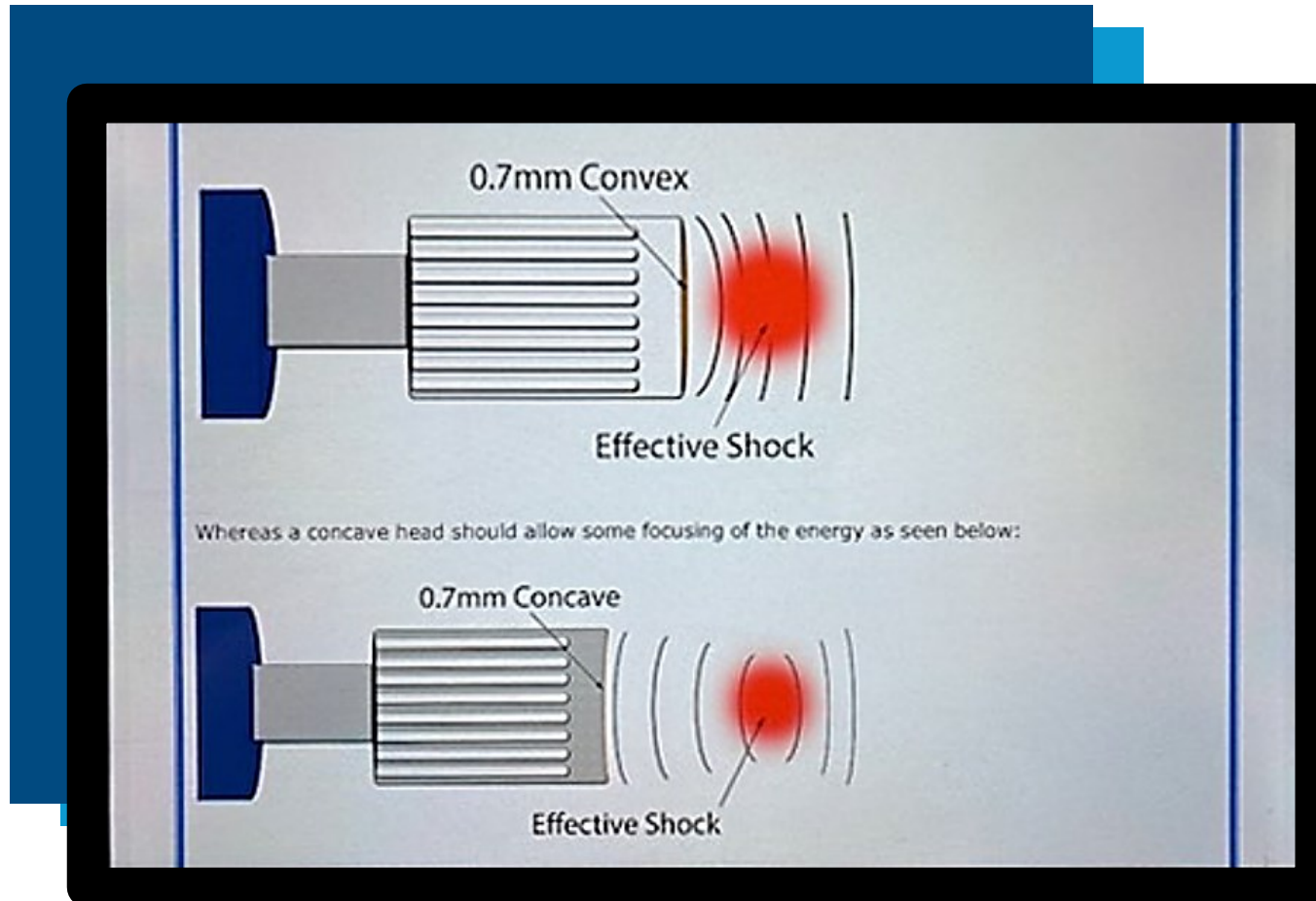
Broader Effect of ESWT

- Destruction of Tissue
- Increase Healing / Blood Supply (angiogenesis)
- Pain Reduction



Tablet Features

Shockwave Education



Tablet Features

Treatment Guidance

ACOUSTIC WAVE THERAPY

ANTI-AGING | REGENERATIVE | ALL-NATURAL HEALING

Shockwave Therapy for the Hand: Carpal Tunnel



Symptoms: Tingling or numbness. You may notice tingling and numbness in the fingers or hand. Usually the thumb and index, middle or ring fingers are affected. You may experience weakness in the hand and drop objects.

Cause: The pain is due to excess pressure in your wrist and on the median nerve. Inflammation can cause swelling. The most common cause of inflammation is an underlying medical condition

that causes swelling in the wrist, and sometimes obstructed blood flow. Some of the most frequent condition are: diabetes, thyroid dysfunction, fluid retention from pregnancy, high blood pressure, autoimmune disorders such as rheumatoid arthritis fractures or trauma to the wrist. Carpal tunnel syndrome can be made worse if the wrist is overextended repeatedly.



Treatment Solution: Treatment options for CTS consist of wrist splints, physical modalities, local

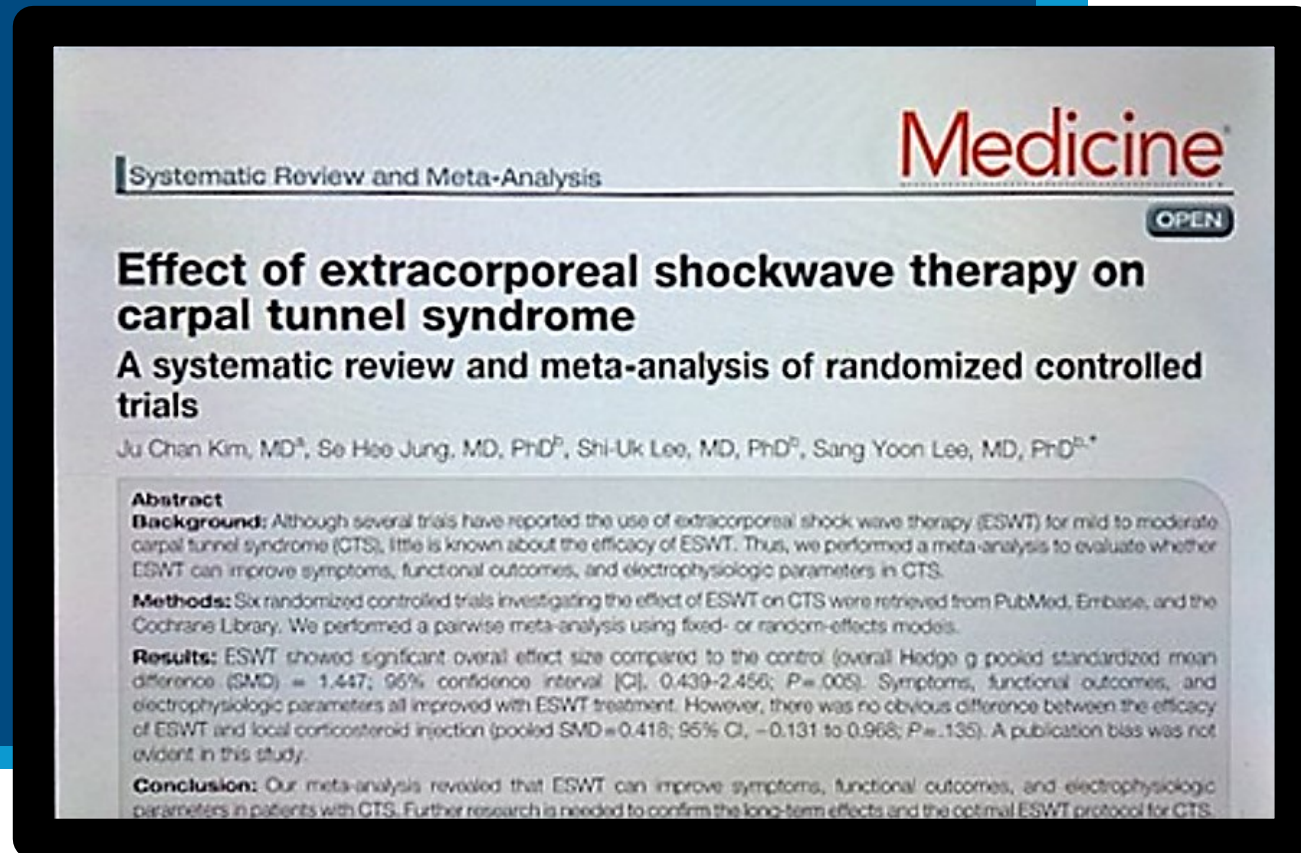
Tablet Features

Treatment Tutorial Videos



Tablet Features

Shockwave Clinical Trials



The image shows a tablet displaying a medical article. The article is titled "Effect of extracorporeal shockwave therapy on carpal tunnel syndrome" and is a systematic review and meta-analysis of randomized controlled trials. The authors listed are Ju Chan Kim, MD^a, Se Hee Jung, MD, PhD^b, Shi-Uk Lee, MD, PhD^b, and Sang Yoon Lee, MD, PhD^{a,*}. The abstract discusses the background, methods, results, and conclusion of the study.

Medicine
Systematic Review and Meta-Analysis OPEN

Effect of extracorporeal shockwave therapy on carpal tunnel syndrome

A systematic review and meta-analysis of randomized controlled trials

Ju Chan Kim, MD^a, Se Hee Jung, MD, PhD^b, Shi-Uk Lee, MD, PhD^b, Sang Yoon Lee, MD, PhD^{a,*}

Abstract
Background: Although several trials have reported the use of extracorporeal shock wave therapy (ESWT) for mild to moderate carpal tunnel syndrome (CTS), little is known about the efficacy of ESWT. Thus, we performed a meta-analysis to evaluate whether ESWT can improve symptoms, functional outcomes, and electrophysiologic parameters in CTS.
Methods: Six randomized controlled trials investigating the effect of ESWT on CTS were retrieved from PubMed, Embase, and the Cochrane Library. We performed a pairwise meta-analysis using fixed- or random-effects models.
Results: ESWT showed significant overall effect size compared to the control (overall Hedge g pooled standardized mean difference [SMD] = 1.447; 95% confidence interval [CI], 0.439-2.456; P = .005). Symptoms, functional outcomes, and electrophysiologic parameters all improved with ESWT treatment. However, there was no obvious difference between the efficacy of ESWT and local corticosteroid injection (pooled SMD = 0.418; 95% CI, -0.131 to 0.968; P = .135). A publication bias was not evident in this study.
Conclusion: Our meta-analysis revealed that ESWT can improve symptoms, functional outcomes, and electrophysiologic parameters in patients with CTS. Further research is needed to confirm the long-term effects and the optimal ESWT protocol for CTS.

Tablet Features

Marketing Materials

Getting Back to What You Love!

Would you like to get back to the activity you love, but it's just too painful?

Help Your Body Heal Itself!

Extracorporeal Shock Wave Therapy (externally applied) physically stimulates the body's cells biologic response and healing mechanisms.

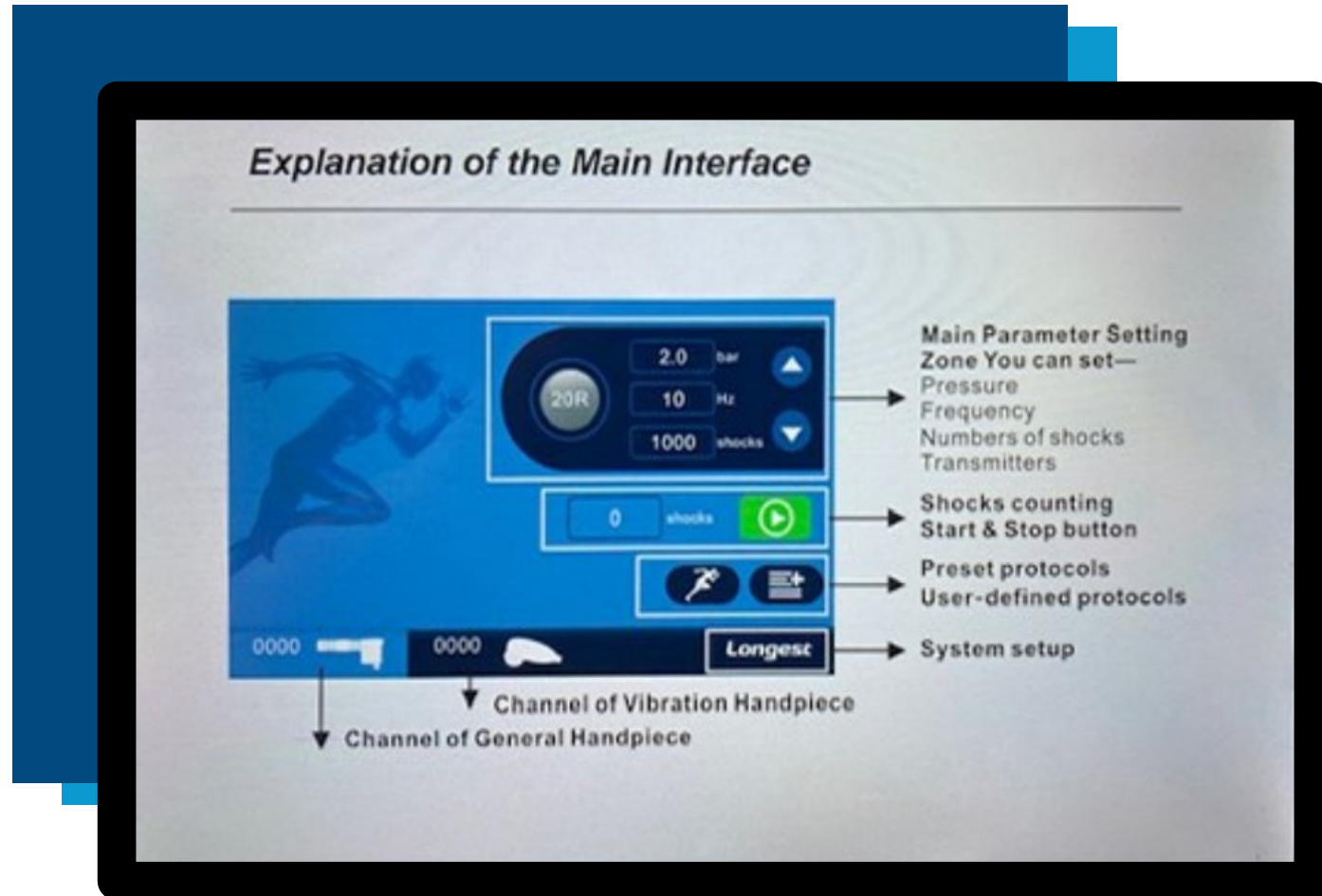
The specificity of the response to the physical stimulus is cell dependent and leads to several biologic responses including:

- ◆ Reduction of inflammation and, as a result, pain.

Fast Easy Treatment!

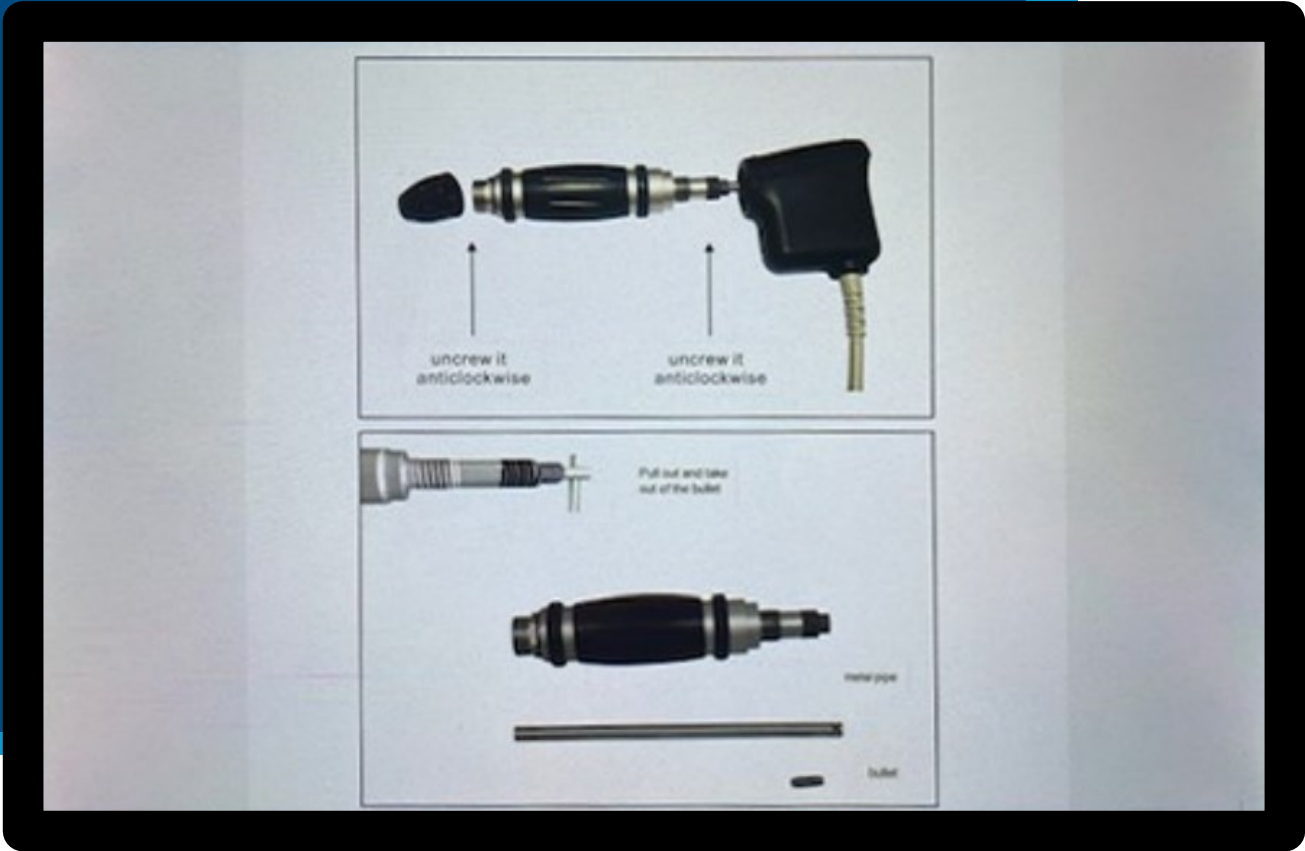
Tablet Features

SWT-2500 User Guide



Tablet Features

SWT-2500 Simple Maintenance



Features

Shockwave Therapy Certificate



Testimonials

"I purchased the SWT-2500s Shockwave device. During the first week, I generated over \$2,500 in Shockwave treatment packages, and \$7,000 by the second week. My patients love it and are already recommending their friends and family to me for treatments. With just a few more treatment packages the machine will be paid for!"

Dr. Wohar - PA

Testimonials

"I got the SWT-2500s shockwave device, and it is really helping my patients. I had a patient who had carpal tunnel for years. After only one treatment, his pain went away and has not come back. The Machine has delivered over 2-Million shocks with no real problems, and very little maintenance".

Dr. Phil Caylor - CA



Best Value on the Market!

Includes:

- SWT-2500 Dual Radial Shockwave
- 3-Tier Work Cart
- 3-Transmitter Heads
- Shockwave Treatment Guidance Tablet
- 50-Patient Tri-fold Brochures
- 3-yr. Warranty
- Shockwave Education Certificate

