Acoustic Wave Therapy
H. William Song, MD
During WWII it was noted shock waves can damage human lung tissue without signs of outer physical trauma.
1983 1st commercial Lithotripter introduced in Germany
How HIFU Works

Ultherapy lifts and tightens skin gradually from the inside out—without surgery or downtime.

1. **Weakened collagen fibers**
   - Over time, changes to the skin tissue result in lines, wrinkles and sagging skin.
   - Ultrasound energy is delivered non-invasively, triggering a natural response that stimulates the growth of new collagen.

2. **Ultrasound energy is delivered**
   - Results appear gradually over 2–3 months and improvements can continue up to 6 months after treatment.

3. **Tighter skin in 2–3 months**

Treatment Areas

Simulate Your Own Selfie Now.

That’s right, click here to see what they would look like with Ultherapy

> "Try On" Now
Shock Wave Therapy
Many Names Same Treatment

- Shock Wave Therapy
- Acoustic Wave Therapy (AWT)
- Radial Shock Wave Therapy (RSWT)
- Extracorporeal Pulse Activation Technology (EPAT)
- Extracorporeal Acoustic Wave Therapy (ESWT)
- Lithotripsy (Kidney Stones)
- Orthotripsy (Plantar Fasciitis)
- Low Intensity Shockwave Therapy (LISWT) (ED)
While there are numerous shockwave machines on the market today, they are all based on one of four basic shockwave (or shockwave-like) technologies.

- Electrohydraulic shockwave
- Electromagnetic shockwave
- Radial pressure wave
- Piezoelectric shockwave
Shockwave pulses are generated by using a projectile 5X heavier than the standard air-pressure systems and a reduced final velocity upon contact with the applicator.
LI-ESWT in vitro and animal studies
Research on the biological effects of LI-ESWT has mainly been focused on vasculogenesis and local neovascularization. Wang and colleagues [Wang et al. 2003] discovered that LI-ESWT stimulates the expression of angiogenesis-related growth factors, such as endothelial nitric oxide synthase (eNOS) and vascular endothelial growth factor (VEGF), and endothelial cell proliferation factors, such as proliferating cell nuclear antigen (PCNA). They also reported that LI-ESWT induces neovascularization, and consequently improves blood supply. Interestingly, they found that 1 week after LI-ESWT, the angiogenic marker levels rose significantly and this effect lasted for approximately 8 weeks. They also showed that neovascularization and cell proliferation were evident 4 weeks after LI-ESWT and persisted for more than 12 weeks. The same group [Wang et al. 2003] investigated the effect of LI-ESWT on neovascularization of the tendon-bone junction. For this purpose, LI-ESWT was applied to the Achilles tendon junction of 50 New Zealand rabbits. The extent of neovascularization was determined from the expression of VEGF, eNOS, and PCNA. They found that the number of neovessels and the expressions of the angiogenic markers and PCNA were substantially increased by LI-ESWT. This group previously reported similar findings in a smaller canine study [Wang et al. 2002] on the effect of this energy on bone–tendon junction in eight dogs: new capillaries and muscularized vessels were seen in obtained specimens 4 and 8 weeks after local LIESWT, with no change in the untreated sites.
Indications for AWT Treatment

• The Acoustic Wave Therapy System has an intended use for therapeutic muscle aches and pains specifically listed with the FDA under Title 21, part 890, subpart F, Sec 890.5660
Contra- Indications

• Do not apply to the eyes or surrounding area, the myocardium, spinal cord, gonads, kidneys, head, or liver
• Corticoid Therapy
• Patients with pacemaker or heart conditions
• Pregnant or nursing mothers
• Polypus in treatment area
• Thrombosis
• Tumor Diseases
• Polyneuropathy
• Acute Inflammation
• Growing Cartilage in children
POSSIBLE SIDE EFFECTS OF TREATMENT

• Erythema

• Temporary loss of Bodily sensation at treatment site

• Temporary itching in treatment area

• Hematoma

All side effects usually subside within 24-48 hours
Practices That Use Shockwave Therapy

- Mens Health
- Physical Therapist
- Urologist
- Orthopedics
- Wellness Centers
- Rehabilitation
- Physiotherapist
- Sexual Medicine
- Sports Medicine
- Aesthetics
Traditional Indications Treated with AWT

1. TENNIS ELBOW
   Painful inflammation of the tendon attachment on the lateral elbow

2. SHOULDER PAIN WITH OR WITHOUT CALCIFICATION
   Painful limitation of shoulder movement

3. GOLFER’S ELBOW
   Painful inflammation of the tendon attachment on the medial elbow

4. BURSITIS TROCHANTERICA
   Painful periostitis of the hip

5. PATELLA TIP SYNDROME
   Inflammation of the point of attachment of the patellar ligament

6. TIBIAL EDGE SYNDROME
   Inflammation of the tibial edge due to excessive strain

7. ACHILLODYNIA
   Painful irritation of the Achilles tendon

8. PAINFUL HEEL
   Painful, mostly chronic inflammation of the heel

INFLAMMATION OF THE TENDON ATTACHMENT
   Painful inflammation of tendon attachments due to overexertion or improper strain, or due to degenerative processes

ACUPUNCTURE POINTS
   Pain therapy through the treatment of acupuncture points

PAINFUL TRIGGER POINTS
   Acute and chronic pain in the back, shoulder, neck, etc. due to permanently shortened and thickened muscles
Common Indications of ESWT for Musculoskeletal Pains

- Shoulder Impingement & Frozen Shoulder
- IT Band Syndrome
- Golfer's Elbow (Medial Epicondilitis)
- Tennis Elbow (Lateral Epicondilitis)
- Carpal Tunnel Syndrome
- Trigger Finger
- Achilles Tendonitis
- Bunions
- Shin Splints
- Plantar Fasciitis
Aesthetic Applications

- Anti-cellulite therapy
- Improvement of uneven lipoplasty results
- Connective tissue tightening
- Skin rejuvenation and elasticity increase
- Lipoedema treatment
- Lymphatic system stimulation
- Appearance of stretch marks
- Minimizing unsightly scars
- Improves Muscle Tone
- Increases Skin Firmness
The effects of acoustic wave therapy on biologic tissue, including stimulation of micro-circulation and improvement of cell permeability. The pressure breaks up the collagen and releases the skin, allowing a smoother surface. The thickened dermis helps to reduce the protrusion of fat into the dermis. Again, this reduces the appearance of cellulite. With its ability to impact both of the major causes of cellulite, AWT is uniquely suited to improving the appearance of cellulite. Acoustic Wave therapy has also been used in pain control, it over stimulates nerves and increases blood flow to treated areas. This makes the treatments comfortable. At higher frequencies, the radial head can also increase muscle tone without exercise.

**The mechanical action of AWT Acoustic Wave Therapy**
1. Disrupts the connective tissue to firm and smooth the skin
2. Causes neo-vascularization, improving circulatory exchanges (the root cause of the problem)
3. Initiates an inflammatory process in the skin, leading to thicker, more elastic skin through collagen production
4. The elasticity of the connective tissue is restored and the skin is smoother, thicker and more elastic with noticeable improvement to the skin texture.

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**BEFORE**

- **BLOOD FLOW RESTRICTION**
  - Capillary system is constrained by hypertrophic fat structures

- **WASTE ACCUMULATION**
  - Waste product build-up provokes alterations in connective tissue

- **COLLAGEN FIBROSIS**
  - Hyperplastic collagen and elastin fibers dimple the skin surface

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**AFTER**

- **IMPROVE BLOOD SUPPLY**
  - Growth of new capillaries increases microcirculation, oxygen supply and metabolic rate in treated area

- **WASTE ELIMINATION**
  - Mechanical stimulation of lymphatic vascular system leads to reduction of edema and better elimination of the lipids from the subdermal fat cells

- **COLLAGEN REMODELLING**
  - Acoustic pulses induce proliferation of fibroblasts. This process leads to the creation of collagen regeneration
Acoustic Wave Treatment on Cellulite
Treatment Areas
Combination treatments
Shock wave therapy enhances results, shortens recovery time, and minimizes the occurrence of side effects.

- Radio Frequency
- Cryolipolysis
- Ultrasound
- Laser
- PRP
- P-Shot
Combination with CoolSculpting Treatments
Doubles the Fat Reduction
Accelerates the Fat breakdown & Absorption

Cool Sculpting Combination with AWT
Biological Effects of AWT
MENS HEALTH APPLICATIONS

• Non responders to Pde5i treatment became responders
• Combination with the P- shot to enhance results of both treatments
• Peyronie’s Disease
• Combination with Laser to enhance the results of both treatments and reduce pain
• Sexual Enhancement (heightens performance by improving blood flow)
• ED
How does Shockwave Therapy Help ED

• Increases Angiogenesis and blood flow
• Quicker results with the combination of PRP & Shock wave therapy
• supply and oxygenation resulting in faster healing. Neovascularization
• Shockwave therapy combined with PRP increases local blood supply causing the release of additional growth hormones. These two processes together increase the stimulation and growth of new arterioles by increasing the number of growth factors tremendously with the combination therapy. The blood vessels improve the blood flow.
Benefits of Shockwave Therapy for Erectile Dysfunction

- Treats the cause, not just the symptoms
- Enables Spontaneous Erections
- Visible Results within 3 weeks
- Offers proven clinical long-term results
- Completely safe with no side effects
- Non-invasive, totally painless
- Triggers natural repair mechanisms by increasing blood flow
- Restores sex life with stronger, firmer, longer-lasting erections
- 70%+ Success Rate
- Compatible with other treatments
Erectile Dysfunction due to Blood flow

- utilizes high frequency, low intensity sound waves to improve blood flow to the penis. The sound waves repair aged blood vessels, stimulate growth of new blood vessels and remove decades of micro-plaque.
- Over 80% of Erectile Dysfunction issues are caused by poor blood flow.
- 52% of Men suffer from some form of ED
# ED Effectiveness with Shockwave

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<th>Effectiveness</th>
<th>Traditional Treatments</th>
<th>Traditional Treatments + Shockwave Therapy</th>
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<td><strong>Poor</strong></td>
<td><strong>Average</strong></td>
<td><strong>Best</strong></td>
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<tr>
<th>Patient Satisfaction</th>
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<tr>
<td><strong>Fewest</strong></td>
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Musculoskeletal Applications AWT

Achilles Tendinopathy, Arthritis, Diabetes, Fibromyalgia, Herniated or slipped discs, Migraines, Multiple Sclerosis (MS), Renaud’s Disease (poor circulation in hands), Scoliosis (Congenital & Postural – often treated as a secondary condition), Spasticity (which is a symptom of many neurological conditions), Spondylolysis or spondylolisthesis
AWT Devices

• Apex (Refine USA)
• CelluPulse (Storz Medical/ CuraMedix)
• Rejuvawave (Storz Medical)
• CellActor (Storz Medical)
• D- Actor (Storz Medical)
• Z Wave (Zimmer Aesthetics)
• BTL – X WAVE (Vanquish)
• BLT- Cellutone (Vanquish)
• Eclipse- Evive
Consumables and Interchangeable Parts

Consumables
Transmitter Gel
Disposable Silicon Cap (dispose after each use)

Additional Parts
Transmitter Tips
Conclusion

Stand Alone or Combination treatments with AWT Devices work to Repair, Restore & Rejuvenate a broad spectrum of health conditions.

• no down time
• pain-free
• simple application
• visible results
• Versatile
• non-invasive treatment