

# The Shockwave Solution

The Non-Surgical Answer  
to Becoming Pain Free



Paul Morrissey

The Shockwave Solution

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## **Here's What's Inside...**

<b>The Shockwave Solution</b>	<b>3</b>
<b>What is Shockwave Therapy?</b>	<b>5</b>
<b>Why Are More People Becoming Interested In Shockwave?</b>	<b>10</b>
<b>Is Shockwave Right For Me?</b>	<b>15</b>
<b>Which Conditions Respond Best to Shockwave?</b>	<b>21</b>
<b>Conditions with NICE Guidelines:</b>	<b>21</b>
Subacromial Pain Syndrome	21
Lateral Epicondylitis.	22
GTPS	23
Achilles Tendinopathies	25
Plantar Fasciopathy	26
<b>ISMST Approved Conditions:</b>	<b>29</b>
<b>Other Conditions:</b>	<b>31</b>
Hamstring Tendinopathies	31
Knee Pain	33
Myofascial pain relief, trigger points	34
<b>So What Benefits Can I Expect?</b>	<b>35</b>
<b>Does Shockwave Hurt?</b>	<b>40</b>
<b>Why Might Shockwave Not Be For Me? (Contraindications)</b>	<b>43</b>
<b>Next Steps</b>	<b>47</b>

# Foreword

I approach writing a foreword to this book from the perspective of having received Shockwave treatment myself and also recommending it to patients.

I have been a GP partner for the past 24 years, with a strong interest in musculoskeletal conditions having managed to acquire quite a number of them myself. I am also the main provider of cortisone injections in our practice, usually performing 15 to 20 per week.

The advantages of Shockwave are many:

- It works
- It's non-invasive
- There's no risk of infection
- No risk of tendon rupture as may rarely occur with steroid injections
- It has NICE approval
- It is approved by most medical insurers

However, there's no such thing as a free lunch. The results are not instant and it hurts; often quite a lot for areas such as tennis elbow or Achilles tendonitis.

The biggest disadvantage in my view is that the results are operator dependant. Any musculoskeletal therapist could buy a machine

and apply Shockwave to a problem area, but without correcting the underlying adverse biomechanics it will not be a long term fix.

Correcting causative factors in combination with Shockwave gives the best outcome.

Shockwave is a major advance in effective, safe treatment. Choose your therapist carefully, and remember, "no pain, no gain".

**Dr Peter Campbell**

GP Partner, Warlingham Surrey

# **The Shockwave Solution**

For the past 12 years I've worked with Shockwave Therapy, seeing it progress from a procedure for the treatment of urological solutions to a practice being used by some of the best sports teams in the world to keep their athletes in peak condition. Unfortunately, this increase in adoption across professionals hasn't trickled down to become an awareness in the general population. The good news is that this is starting to change and more and more people are starting to experience the benefits Shockwave can bring.

This book is designed to demystify Shockwave and provide you with the answers to the most frequently asked questions. Armed with this information, you can make an informed decision as to whether Shockwave is right for you.

Of course a book cannot replace talking with a professional, but it can help you take your research to the next stage. Over the following pages we'll look at the symptoms you might be experiencing, the conditions Shockwave is known to help and the contraindications that rule out Shockwave as an option. We'll end with that all important question 'Does Shockwave Hurt?'

All too often people are left with chronic pain they are trying to manage, or face surgery that could cause more problems. For many, Shockwave provides a successful alternative to surgery, if only people knew about it.

I look forward to helping you in your journey to becoming pain free.

*Paul*

## **What is Shockwave Therapy?**

Let's start by looking at what Shockwave therapy, or as it's better known in the trade, Extracorporeal Shockwave Therapy (ESWT) is. It's a treatment used in physical therapy, orthopaedics, cardiology and urology, where the practice started.

It's not a new discipline, in fact one of the earliest uses was in Urology and the treatment of kidney stones. In recent years, it has been shown to be beneficial for an increasingly broad number of conditions and has been used by a number of high profile sports men, women and teams, creating a much larger awareness of the benefits it can provide.

There are two types of Shockwave therapy devices in musculoskeletal medicine used today. Both are based on a wave of energy generated outside the body giving the therapy the extracorporeal (outside of the body) part of its name; but they differ in the way the 'waves' are delivered to the affected area. In both cases the physical effect on the body is comparable, as is the duration of treatments.

The easiest way to think of the energy created by a Shockwave machine is to imagine a Jacuzzi, as the bubbles are generated outside of the body,



the energy of the jets is focused on a certain area and the effect can be felt below the surface of your skin. The stronger the jet, the deeper the effect. Similarly, the more focused the jet, the more targeted the impact.

A Shockwave machine works in a similar way. A wave of energy is created and delivered to the body through a hand-piece used by the practitioner to deliver the wave to the target area. Like the jet of a Jacuzzi, the hand-piece can deliver a narrow wave ('Focused Shockwave') or a wider wave ('Radial Shockwave').

While there is debate amongst the professional community about what specifically happens during a Shockwave treatment, we know it causes micro trauma to the soft tissues around the target area which creates 'neovascularisation'. This essentially means it causes an increase in new blood vessels. These bring about increased blood flow to the area and speeds up the healing process in the area. A secondary effect may also be seen due to the stimulation of an acute inflammatory response to that of a chronic injury.

More recently, the debate is focusing on something called 'Cavitation'. There are thousands of these Cavitation bubbles generated by the Shockwave and are, simply put, empty cavities created behind an energy flow.

These bubbles, just like in the Jacuzzi example, expand and then burst. When they burst, we know this is a major consideration in terms of repair and causing soft tissues to repair, as this irritation created within the tissue when the bubble bursts helps break down topologies and, at times, deposits of calcium within the soft tissues.

The Shockwave machine is responsible for creating the force and directing the force; to ensure the bubbles burst at the right point is the job of the hand-piece.

Again, like a Jacuzzi, more energy can be more effective, but it can also be more uncomfortable so treatments are often a balance between these two conflicting elements. The good news for you, the patient, is that there are options to tailor the treatment to your individual condition and comfort level.

Fortunately, Shockwave technology has improved over time. A modern machine like the EMS Swiss DolorClast and the Evo Blue hand piece is likely to be more comfortable, as it is both more effective in generating the necessary power and more efficient in delivering the energy to the right spot, so you require fewer treatments. A number of machines on the market simply do not have the power and the hand-piece loses a substantial amount of the energy

within the superficial tissue and not directed to the injured site. You need a hand-piece where the energy is constant, indeed this can and does speed up the treatment time, not a bad thing when the treatment is described as uncomfortable.

Working with a practitioner using the latest equipment can result in faster pain relief, as well as a more comfortable experience.

Focused Shockwave therapy is more commonly used in hospitals to treat fractures and other 'deeper' conditions that often require more targeted delivery of the energy to a deep area. Radial Shockwave therapy is the most common type of therapy you are likely to encounter and is used by orthopaedic practitioners including osteopaths to treat conditions like Insertional tendinopathies, or injuries that are closer to the surface than those treated with Focused Shockwave Therapy more commonly used for depth.

Shockwave has a broad application with various levels of academic and anecdotal support for its effectiveness in different areas. In addition to the applications mentioned above, there is evidence to support Shockwave therapy to address dermatological conditions like cellulitis, soft tissue wounds, lymphedema and even erectile dysfunction. Due to its non-invasive nature, it is

often seen as an option where other treatments have failed and as long as the contraindications or warning signs are considered and clinical reasoning is sound, there is often no reason not to consider it. Especially given the supporting evidence for many conditions.

For the purpose of this book though, we'll be focusing on radial Shockwave therapy to treat tendinopathies as an alternative to surgery and where other approaches have failed to deliver results and you are still experiencing pain.

## **Why Are More People Becoming Interested In Shockwave?**

Shockwave therapy continues to be very popular across Europe and it's not uncommon for patients to be referred early to a Shockwave specialist for a number of unresponsive injuries. In the UK we've also seen a resurgence in interest of Focused Shockwave therapy in a clinical setting like Orthopaedic departments to treat issues with delayed bone healing or stress fractures.

It's the growing interest in Radial Shockwave therapy, often as an alternative to surgery, that's driving a lot of interest from people, just like you, who are experiencing persistent pain from injuries that have not responded to other treatments.

This increase in awareness comes from developments in a number of areas.

First, as the research continues there are an increasing number of conditions recognised by the UK's medical treatment governing body 'NICE' as suitable for Shockwave treatment. Though not the only conditions you may find Shockwave helps with, a published NICE guideline is a driver for many doctors and

practitioners to feel comfortable about recommending it, as it is safe and effective. We currently have 6 of these evidence-based conditions recognised by NICE with guidelines in place. These are:

- Achilles Tendinopathies
- Tennis Elbow
- Plantar Fasciopathy
- Greater Trochanteric Pain Syndrome (GTPS)
- Shoulder Tendinopathies
- Erectile Dysfunction.

These have different research backgrounds and some of the conditions were acknowledged back in 2005, but all have reached the same evidence-based criteria for the guideline to be issued and with more research, comes the potential for more guidelines

As the benefits of Shockwave are documented by other bodies more medical professionals are using the technology for conditions without NICE guidelines. Conditions including some of the dermatological complaints mentioned earlier, as well as Osteoarthritis, trigger point pain syndromes or muscle hyper sensitivity/hyper irritability (technically known as Myofascial Pain Syndrome) are all now treatable with Shockwave leading to an increase in use and awareness. There is also ongoing research with other areas

such as Shockwave for Angina, essentially revascularisation often known as ESMR.

In addition to the growing medical research, the technology is being used by more and more professional sports teams and individuals, along with the professionals who take care of them.

As teams look to maintain the fitness of players, alternative preventative and restorative treatments are a key tool in the medical teams' toolkit. Many professional football teams including AC Milan and those in the Bundesliga use Shockwave to both treat injuries as well as reduce the likelihood of problems occurring. Reports of success in helping players recover, and get back to training are common. It is also known that a number of Sports Physicians from the world of football and high level athletics use this treatment much earlier than most, as pressures are extremely high and the results are very encouraging.

This isn't restricted to football though. Over the past few decades we've seen increasing use of Shockwave across the majority of major sports including The Davis Cup, Rugby World Cup and the Olympics. In our practice, we have treated professional dancers, rugby players, football stars where their success had been hampered by a persistent injury.

All this builds the public awareness of the Shockwave therapy, professionals that you are likely to come into contact, are increasingly aware of the possible result; leading to the third reason you are likely to be investigating Shockwave today.

Over the last few years we have seen an increase in the number of people investigating Shockwave themselves. In fact, this self-directed research accounts for a significant number of referrals we see in the practice today. As people become more accustomed to investigating their own symptoms and question the medical assessment of their condition, they discover an increasing body of research discussing the benefits Shockwave therapy can deliver. In much the same way that 'cupping' is currently very popular thanks to the exposure it received from the Olympic swimmers this year, the research and anecdotal results you can easily find have encouraged many people to investigate their options further.

Unfortunately, very few NHS hospitals offer Radial Shockwave Therapy, so it's still most commonly seen in private practice. This can restrict the availability and discussion of Shockwave as an alternative to surgery to those willing and able to carry out research beyond their GP.



As you read this book you are probably in a similar situation.

You're still experiencing pain from a condition that is not responding to other treatments. You may have been prescribed a course of physiotherapy or acupuncture.

You may have had several cortisone injections, but these are not addressing the cause and surgery may have been presented as the only alternative.

The elite athletes and professional dancers I work with are often in the same situation, dealing with chronic injuries that are simply not responding and facing a trip to the operating table.

The good news is, Shockwave Therapy provides an evidence-based, successful alternative to surgery, that's provided by an increasing number of practitioners in your local area.

## **Is Shockwave Right For Me?**

Shockwave is well known as a treatment for Tendinopathies, in some cases, calcific build ups and increasingly in areas of regenerative medicine like spinal cord injuries and vascular & nerve regeneration

These can sometimes be difficult to label appropriately and looking at Shockwave as a treatment for chronic pain that has failed to respond to other interventions, is a good way to identify conditions that Shockwave can treat, especially as an alternative to surgery.

Unfortunately, in the UK, we still lack a broad awareness of Shockwave in the GP community and some people are left with pain that they are asked to manage.

Depending on your condition, symptoms can manifest themselves in a number of different ways, however the typical treatment protocol is similar and many people will recognise the following example.

You've had a niggling pain for some time but it isn't too bad and rubbing it better often takes the edge off and you forget about it. Over time the pain becomes more frequent or lasts longer. It may even have got to the stage of asking for painkillers or anti-inflammatories at the local

chemist. Then one day at the beginning of summer, a day in the garden or the first round of golf will result in a pain that is too uncomfortable to ignore.

At this point, a trip to the doctors results in the pain being treated acutely. There is an interest in dealing with the immediate symptoms but not necessarily the cause. Once the immediate pain subsides you may be recommended acupuncture Physiotherapy or to an Osteopath. If the pain is still present you may be given an Orthopaedic referral or sent for an Ultrasound. Finally, an acute strain which should have settled down or a degenerative condition in a tendon is identified, and in many cases surgery is the only option given. We know only too well that this type of tendon deterioration does not do well with surgery! The common thought is that the condition is described as a newly found tendinopathy. Later you will find words like tendinitis and other names relating to tendon types of injury rather than deterioration.

By this point you have lived with the pain for 6-8 months and you're willing to go under the knife but for those conditions that are persistent and failing to respond to other treatment, Shockwave could well be the answer.

In Europe there is a greater focus on promoting Shockwave earlier in the process and it will

typically be suggested after three months. Their attitude is why wait? Though the UK guidelines say it shouldn't be an option before six months, you can still investigate your options earlier. The most important element is to get an accurate diagnosis of the problem as early as possible. You should always attend appointments for scans to avoid delays and, if your GP is reluctant to refer you to a hospital you can consider seeking your own investigation from a sports Osteopath.

So, now you have a general understanding of the types of pain that could indicate Shockwave as a solution, let's quickly look at a few specific symptoms you may be suffering from.

Many people suffer from Achilles problems, symptoms typically include morning stiffness in the ankles and lower calf and is often accompanied by difficulty walking down the stairs. The affected area often gets better with activity but then, when you sit down again, it stiffens up and the pain returns. To many, this may not be something they have diagnosed, but any long term, ongoing pain should be investigated.

If you suffer from ongoing shoulder pain that has again failed to respond to treatment, it could be caused by a calcific tendinopathy. This is where a build-up of calcium in the supraspinatus tendon

leads to pressure, pain and in some cases, severely limited movements as the arm is abducted and mechanically it impinges on the acromion under the ACJ, the joint on the outside of the clavicle where the shoulder blade and the clavicle meet. As with the Achilles, in the early stages symptoms may include mild pain and stiffness which is rather widespread, this time caused by the body trying to protect the affected area. Soon though, the symptoms become more persistent and your range of motion reduces as the calcified area becomes more apparent. It's as if the calcification has grown in a short period of time, in reality this process like all the others has taken place over a considerable period of time.

This is thought to be one of the worst pains possible in the shoulder with the growth reaching a considerable size if left untreated. It's a bit like a kidney stone in the shoulder and, as with kidney stones, it is easier to treat the sooner it is diagnosed. For many, leaving it too long means that surgery is the only option as the larger the growth, the more power is needed for Shockwave to have an effect and this can simply be too painful. This is a strong case for Focused Shockwave, as it's easier to tolerate from the patients' perspective, however it is often patient dependent and I have done a good number of these with Radial with considerable success.

Caught earlier though, Shockwave is a great solution. We've treated many people in the practice, with a series of treatments breaking down the growth and patients start feeling some relief after just a few sessions.

With tennis elbow you may be experiencing pain in the forearm. Often occurring after an increase in use, it can be misdiagnosed as an acute injury and the condition is treated as such. If the injury fails to respond to initial treatments (anti-inflammatories or non-steroidal injections) it may be a sign of tendon damage and investigating Shockwave could be the way to go.

Unfortunately, and all too often, the initial treatment is an injection given for pain relief that helps immediately but actually inhibits any healing. Injections have often been found to injure the tendon, often causing an interstitial tear and needs Shockwave to restart the healing process (neoangiogenesis).

The last set of symptoms I want to mention are slightly different. Though not one of the 6 conditions with NICE guidelines, Shockwave has a great track record helping in the recovery of joint replacements. Often the process involved in a hip, knee or shoulder replacement can create symptoms similar to that of a tendinopathy. You may have had surgery in the last year and still experience pain, stiffness or tenderness in the

area around the new joint. Often patients will need a second surgical review procedure to address the damage caused by the first. We often find that the joint capsule has issues and, for instance in the hip, presents rather like a rotator tendinopathy. Smart surgeons have found that in the presence of skilled hands Shockwave can save review surgery.

This is another very successful area in which Shockwave can and does really help. Because the therapy is designed to stimulate the areas natural healing process, this can be beneficial post-surgery where encouraging the tendons to heal around the new joint can help avoid a further procedure.

If you've ever said something like 'I've had a new hip but I'm still not right', then Shockwave may be worth investigating.

Shockwave is not for every condition, but for many it can be the answer to long standing pain and discomfort.

## **Which Conditions Respond Best to Shockwave?**

We've talked about the symptoms you may be experiencing. Now let's look at a few of the specific conditions Shockwave can help relieve.

In the UK, the official clinical guidance is issued by NICE National Institute for Health & Clinical Excellence). Their remit is to make recommendation on various treatments that have been evidenced and backed by substantial research. For Shockwave we have six conditions with guidelines and although the therapy may be suitable for a number of other conditions, your GP is very likely to be aware of Shockwave as an alternative to surgery in the following circumstances.

### **Conditions with NICE Guidelines:**

#### **Subacromial Pain Syndrome**

Also known as Rotator Cuff Disease, this is often caused by trauma, inflammation or deterioration, (as you read this and progress, you'll see the similarities that present with these chronic tendinopathies). This is usually diagnosed by a clinical assessment and often an MRI or Ultrasound scan that essentially excludes other pathologies (possibilities). We see them most commonly in throwing sports, golf,



volleyball, gymnastics, and it is probably the most common condition that's present in the shoulder today.

Treatment for this condition used to be pretty uncomfortable, but thankfully new hand pieces, like the Evo Blue have made it a lot easier on patients, leading to greater compliance (people completing the course of treatment).

As with all Shockwave treatments you will generally benefit from a hand piece that consistently delivers the agreed frequency, maximising the energy put into the tissues. More energy into the tissues means more cavitation and, as we explained earlier, more cavitation is a major mechanism in terms of repair in the healing process.

### **Lateral Epicondylitis.**

The lateral epicondylitis is better known as tennis elbow. Incidentally, it's called tennis elbow but we rarely see many tennis players with this condition.

It's a tendinopathy of the common extensor mechanism, the muscles that bring the wrist up to the ceiling, the hinging action of the wrist. Essentially, there's a particular tendon that we frequently see become injured. In a lot of patients, we see a substantial amount of power in the forearm muscles, but the point of

attachment of this tendon is quite weak. As a result, a sudden force, a sudden explosion, causes interstitial tearing where the tendon attaches to the bone. That is enough to cause a nasty inflammatory situation.

This is not usually thought to be an inflammatory disorder though. Instead it's a condition caused by regular overloading that causes the micro traumas leading the tendon to degenerate/deteriorate with time.

Fortunately, this condition responds very well to Shockwave. The diagnosis is usually a clinical assessment, ultrasound scan is often used, or even an MRI. The treatment is very successful, it's safe and it's an effective treatment for patients who have suffered for more than 6 months.

## **GTPS**

### **(Greater Trochanteric Pain Syndrome)**

There was well renown study done by a gentleman called John Furia, a New York orthopaedic surgeon, that changed the way people think about this syndrome. It can be a little bit of an awkward condition to heal and used to be called Trochanteric Bursitis but is now referred to as Greater Trochanteric Pain Syndrome, because it is pain around the entire trochanter area (the hip), rather than just with the Trochanteric Bursa.

This essentially is pain and tenderness in the region of the great trochanter, the little bump on the side of the hip, where the outside of the thigh meets the buttock. It is a complicated area as there's 5 muscles at the site of attachment and like the shoulder, it's prone to degeneration. You can think of it as the rotator cuff of the hip.

The process we typically see, starts with tendinitis and we eventually get to the stage where we see tears within the tissues around the trochanter. There are three bursas in this area that can cause all sorts of problems because they act as a cushioning device. The superficial muscles then have to react and referred pain can develop in the back and the knee.

This is similar to the joint replacement symptoms we discussed in the last chapter. I am sent a number of patients, from senior orthopaedic surgeons, who have a new hip and they're experiencing GTPS type symptoms and irritation in the soft tissues. Though we have to work slightly differently with the procedure in this area, it works extremely well.

We look again for a clinical assessment (and imagery if necessary) to exclude any deeper hip pathology. This is fast becoming one of my personal favourite conditions to treat because we're seeing such great results even with total hip replacements and glute-med tears.

GTPS has had NICE guidelines from 2011, so we know that it's a safe and effective treatment.

### **Achilles Tendinopathies**

Achilles tendinopathies are typically not related to a specific injury but often the result of repetitive strains over a long period of time or a sudden increased activity. This strain can also be caused by tight calf muscles, flat feet or poor biomechanics and we can see the condition in patients who are quite sporty at one end of the spectrum through to those with a high BMI.

Problems with the Achilles can manifest in two main areas, an insertional problem where the tendon meets the bone and compensates by causing tissue tightness further up the leg or a mid-portion issue. With insertional tendinopathies there may also be an associated spur or bony growth adding to the pressure on the tendon. It can be difficult to identify cause and effect here. The presence of a spur does not necessarily mean you will experience any pain and, it is not necessary to remove any growth before treatment, but there is also the chance the spur could be contributing to the problem and though the Shockwave treatment will usually relieve the symptoms, if the problem is being caused by the growth, the issue may return. Some researchers have confirmed that with Shockwave, some spurs or bony outgrowths can be removed.

The mid portion Achilles problem, often incorrectly referred to as tendinosis or tendinitis, has symptoms and characteristics similar to an insertional problem, but the pain and any swelling is found 2-6 cm above the insertion. This problem can affect both sedentary and athletic patients and is often diagnosed as being caused by mechanical overloading. This is a broad definition though and the actual cause may be one of the issues we described earlier.

### **Plantar Fasciopathy**

Probably the most common condition that is known to respond very well to Shockwave is Plantar Fasciopathy, often known as Policeman's foot.

The pain is usually felt on the medial tubercle (the calcaneus) of the heel and is felt along the Soft Tissues of the foot to the base of the toes. This is the inside of the calcaneal, the bone that has the heel strike with the ground. Given the foot's biomechanical structure, a heel strike as you walk is the most common footfall pattern, but this alone is not necessarily the cause of any problems. Factors through the hip and joints above the ankle can also contribute to this condition.

Plantar Fasciitis is the condition where we often see patients with high BMI, diabetes and other pathologies that affect the foot. The foot might be

the last thing in their consideration but a nasty plantar fasciopathy can cause significant discomfort and pain for patients. Given the impact on their mobility, it can often lead to the deterioration of other health conditions. This is a big problem with a large number of the population affected. In America, 2 million people annually visit doctors for treatments of this nature.

According to the College of Podiatry, between 75-80% of people in the UK report some sort of foot problem with more than 44 million days of work lost each year.

With this condition the symptoms are often morning pain or pain after resting. Typically, there is some improvement with movement as the area 'warms up' however with more severe conditions the patient simply can't walk very well.

Because so many people are treated for this condition each year, many patients we see have already had injections, physiotherapy, acupuncture and heel supports. Lifting the heel and arches by way of orthotic devices can be of great help to correct the biomechanical issue however, patients are still left with an unremitting pain.

The clinical assessment is similar to the other conditions with imaging used to exclude or confirm the diagnosis. There are a few indicators of this condition that are easy to identify without the need for screening. Simply holding your toes and bringing them up towards the body may be enough to give you pain along the underside of the foot as this stretches the affected tendon and could indicate a plantar fasciopathy. With more chronic cases the heel pad may also be visibly swollen.

The largest double-blind study into the effectiveness of Shockwave Therapy was conducted by Gerdesmeyer in 2008. It conclusively proved this is a safe and effective treatment for recalcitrant (recalcitrant means not responding or simply being stubborn to heal) plantar fasciopathy and we subsequently have had NICE guidelines from 2009. The complex biomechanical nature of the foot can make it a difficult area to treat but the results are among the most successful of any Shockwave treatment.

### **ISMST Approved Conditions:**

In addition to the conditions approved by NICE, There has been substantial progress in a number of other conditions by researchers and medical teams in Europe, the United States, Japan and other countries in Asia.

The ISMST (International Society for Medical Shockwave Treatment) maintains a list of recommendations for the use of Shockwave in medical indications. Though not all are on the NICE list, these have been gathered by the leading experts in the field and you may see benefits from Shockwave Therapy. Given the limited risks of correctly applied treatment, an increasing number of people are looking to Shockwave as a treatment option.

More information about the ISMST is available at [www.Shockwavetherapy.org](http://www.Shockwavetherapy.org)

### **ISMST Approved Standard Indications**

Chronic tendinopathies:

- Plantar fasciitis with or without heel spur
- Achilles tendon
- Radial epicondylopathy (tennis elbow)
- Rotator cuff with or without calcification
- Patella tendon
- Greater trochanteric pain syndrome
- Impaired bone healing function:
  - Delayed bone healing
  - Stress fractures



- Early stage of avascular bone necrosis (native X-ray without pathology)
- Early stage osteochondritis dissecans (OD) post-skeletal maturity

Urology:

- Lithotripsy (extracorporeal and endocorporeal)

Muscular pathologies:

- Myofascial syndrome (fibromyalgia excluded)
- Injury without discontinuity

Impaired wound healing

Burn injuries

Salivary stones

### **Other Conditions:**

Lastly, there are a number of peer-reviewed resources that evidence the benefit Shockwave can have on other conditions. These include The International Society for Medical Shockwave Treatment (ISMST), started in Europe (which is where I started my journey) and has since developed internationally as users from the world of orthopaedics, sports medicine, dermatology, cardiology and veterinarian medicine found success in their respective fields of excellence and PEDro, a database of over 34,000 evidence-based studies that is a project of the Centre of Evidence-Based Physiotherapy. From these and other sources we find evidence to help a far wider group of people.

### **Hamstring Tendinopathies**

There are 3 tendons at the back of the thigh that connect the hamstring to the base of the pelvis, like many of the injuries we have discussed the tendons are subject to repetitive strains and micro trauma, elasticity is removed from the tendon and thereby degeneration ensues. We often find this area can be the cause of back and hip pain due to its anatomical connection at the base of the pelvis.

Chronic proximal hamstring tendinopathy is an overuse syndrome that is often managed by non-operative measures

This is one of the most common conditions to treat with Shockwave that does not have a specific NICE Guideline, but again endless studies to substantiate same. As you can imagine the symptoms and the biomechanical issues are similar to the tendinopathies we've mentioned earlier. Typically, with an insertional problem, Shockwave is used by many sports physiotherapists and osteopaths to great effect, with some outside the UK starting treatment as early as week 6 from the injury (again considered opinion is why wait!). A patient will typically see results between treatment two and three and a course of four to five treatments will see the injury repaired.

Many people find this is the best result and far more effective than a course of injections, where even within the medical community there is a growing consensus that it's at the end of its era.

Though we don't have a NICE guideline, we do follow the same protocols for assessing the injury before treatment. So as before, this will be an injury failing to respond to other treatments and has been present longer than 6 months.

Because the body has stopped healing we need something to reboot the healing mechanism. Shockwave's ability to stimulate this regeneration in areas that are complex or difficult to heal is the key to its success.

## **Knee Pain**

This is another favourite of mine for labels like Patellar Femoral joint dysfunction, jumpers knee, Tendonitis are all similar to those mentioned before, in as much as they're overuse injuries from too much jumping, running or even (and very commonly) poor biomechanics with the lower limb simply overloads the patellar tendon.

The diagnosis is on clinical assessment, use of MRI's if in doubt. Histology from biopsies confirms often that the tendon is of a degenerative nature and accordingly given the name 'Tendinopathy'.

We also see chronic distal hamstring tendon injuries on the outside, back of the knee often from deceleration activities and indeed often partial avulsions (tears). The treatment is the same as discussed previously.

We see two common situations with Shockwave patients, particularly those with knees issues.

Often the patient is unable to complete physiotherapy successfully and thereby undertake to rehabilitation. The Shockwave treatment reduces the symptoms of the injury, often reducing pain by the 2 or 3 treatment, this in turn offloads the stresses and the patient can complete a successful rehabilitation.

In other circumstances we find that the Shockwave therapy will simply do the job. It will reboot the body's natural healing process as described throughout this book, and the injury recovers without the need for additional treatment.

### **Myofascial pain relief, trigger points**

These can be found all over the body. They can be a common cause of neck and back pain. As you can imagine, this can be difficult to pin point the cause, but often we consider posture, modern living, stress anxiety and perhaps all of the aforementioned, Shockwave is increasingly used as an alternative to physiotherapy and acupuncture for those non-responsive patients. This is more relevant for older, latent conditions rather than the acute pain point issues.

Focused Shockwave is used for delayed bone fracture healing and non-union fractures where a bone is not healing for an extended period of time. Though there isn't a guideline, there is a lot of evidence of Focused Shockwave success (as with Radial Shockwave Therapy) as it breaks down the area and encourages a new healing. These procedures are more likely to be carried out in an Orthopaedic or a Sports Physician's Clinic, or indeed a Urology Department.

## **So What Benefits Can I Expect?**

The most important thing is that the condition is correctly diagnosed. With a condition that is correctly diagnosed patients can expect the appropriate treatment recommendation and then symptoms to be greatly improved. Rather like any medical condition. I tend to follow a rather strict protocol and use the criteria mentioned throughout. Progression may take time, and this will vary from patient and condition. The clinical studies report a success rate above 75%. Though it's not popular to attribute a percentage to treatment success, it is statistically far more likely that you will have a more beneficial outcome from Shockwave than from surgery, even though there are advancements in arthroscopic medicine.

The treatment is essentially over rather quickly, and patients are very happy with that. It's called Shockwave for a reason! Each session will be tailored to your needs, but as a guiding principle we deliver a set number of Shockwave impulses to deliver energy to the site of the injury during each session. Typically, your first treatment may be 30 minutes as we explain the process and you experience the delivery for the first time. Most people find the treatment a little uncomfortable until we deliver about 500 impulses, then there's a release of a pain and growth mediator called

substance P. It's as if we have turned the power down for the remaining impulses thereafter and delivery of the remaining treatments can often be 15-20 minutes. This is much faster than most other treatments you may have had in the past and also gives us time to discuss ensuing exercises post the Shockwave treatment.

Because there is no medication or injections associated with the procedure, there is no need for numbing agents or anaesthetics, it greatly reduces the risk of side effects. Unfortunately, it's not uncommon to see tendons rupture as the result of injections. This can set back recovery by many weeks or months, so a treatment with almost no side effects is a huge benefit to your overall health.

You will be asked to stop any non-Steroidal anti-inflammatory medications for 14 days prior to the course of treatment, if medication is needed (which is unusual) then paracetamol and codeine could be considered. Please discuss this with your Physician and inform the practitioner delivering the Shockwave treatment.

Research is finding that Shockwave not only helps in chronic tendinopathies, it also helps soft tissue injuries that often accompany the specific injury we are treating. As part of the treatment, a trained practitioner may deliver additional energy to the area surrounding the injury to

promote soft tissue healing. As we described earlier, Shockwaves are abrupt pulses of energy and cavitation follows thereafter which we know is a major mechanism in triggering the body's own healing mechanism. By additionally adding further energy to the surrounding tissues we're able to promote repair to this secondary area. This process again is quite fast. Simply changing the head on the hand piece and adjusting the setting means we can quickly move from targeting the specific injury to the surrounding area.

In terms of overall healing, it may take up to 6 months to fully recover, however most patients notice a positive improvement between the 2-3rd treatment. With a course of treatment lasting up to 5 sessions for the more recalcitrant conditions, we'll often see people asking for the last few sessions to be accelerated as they feel the benefits and want to complete the course as soon as possible. We'll often schedule the first three treatments a week apart with any remaining treatments (if necessary) delivered with a bigger gap so we can monitor progress.

More often than not, three treatments seem to be the sweet spot, delivering the right amount of power to generate the required effect in the body. As the area heals, many patients report an ongoing sensation of healing between treatments. As we know Shockwave works by



stimulating the healing process this is not surprising, but hearing people say “I can feel the Shockwave doing its job.” It’s a great sign of the sense of wellbeing people get from the treatment and resolution of pain.

Shockwave also facilitates recovery by allowing other healthcare professionals to do their job. We’ve talked about the benefits for post-op joint replacement surgery earlier and this approach of using Shockwave to compliment a larger care package is an often overlooked benefit. Because Shockwave stimulates recovery at both the site of the injury and the tissue around it without surgery or injections, improving the condition means you can pursue additional treatments that could speed up your recovery. In this scenario your Orthopaedic Surgeon would advise on a case by case accordingly.

In my experience, we need to have a team involvement with the patients focused on getting you the best results across disciplines. At our clinics we are a centre of excellence where all the staff discuss patient care together. Patients care and resolution is a strong priority to us so it may well start with Shockwave but as the immediate condition improves, complimentary physiotherapy, osteopathy or Pilates may help to build strength or mobility even faster. The key benefit of the Shockwave element of this care is

that it quickly stimulates recovery without further damage, so you can do more, faster. Let me finish this section with an anecdote to illustrate the results you could see.

I have just treated a patient who's been living with knee pain for over two years. What makes it worse is he's a professional athlete. A 6'11" US basketball player for whom pain free movement is key to his career. He is at a leading US college.

Having tried all the conventional treatments, which gave some temporary pain relief, the underlying condition and associated discomfort remained. He's was in the UK over the summer and after injuring his knee was again recommended Shockwave therapy by the local hospital. As we mentioned, unfortunately this procedure is not available in many hospitals so he was referred to us as the experts in the area.

We started a course of three treatments and after two years of pain, he felt the benefits and reported improvements in the mobility of his knee and the pain he was feeling after just one treatment. Having completed the course, he now has near full mobility and is able to get back to the game.

## **Does Shockwave Hurt?**

Shockwave, like many medical procedures is probably best described as uncomfortable. This of course is very subjective person to person and I've seen the biggest guys have to take a break mid-session while others sail through. The great news is that improvements in technology and delivery practices means it becoming more comfortable all the time.

Gone are the days of being lead into a cold room with a device looking like something from a 1960's Sci-Fi movie. Today's machines deliver the treatment in an efficient way designed to minimise the duration of each treatment. Combined with the ability to vary the power and pattern of the treatment, the machines of today are far more 'friendly' than those of the past.

As with a trip to the Dentist, it's often the anticipation of the treatment that's worse than the actual appointment. Most treatments are between 20-30 minutes and my general advice is to manage the discomfort through focus and breathing, allowing you to receive the full treatment wherever possible. We know that higher power and longer duration will deliver more benefit but at the end of the day you should work with a practitioner who is aware of your tolerance, but is certain enough in their work to

deliver the most effective treatment that will give you the outcome you're looking for.

The immediate discomfort of the procedure will subside as soon as the treatment is complete. Some patients experience residual tenderness after the treatment and It may produce some minor skin bruising, reddening or swelling around the contact point. This typically settles down within 36-48 hours and has usually gone completely before the next treatments. This is one reason we try to schedule appointments a week apart.

If you experience significant discomfort or pain, medication like co-codamol and/or paracetamol is also an option, however as mentioned in the last chapter, you need to discuss this with your practitioner as it's not possible to deliver treatment if you are taking any non-steroidal (NSAIDs) medication like Ibuprofen or Aspirin due to their anti-inflammatory or blood thinning nature. This type of medication must be stopped approximately 2 weeks before your treatment.

Whenever you're considering the discomfort though, bear in mind we are trying to 'fix' the pain and discomfort you are already experiencing and we are looking to avoid the significant pain and long-term risks associated with surgery.

Shockwave therapy is intentionally causing micro abrasions to the area in order to encourage repair. Your body has stopped healing the affected area so we have to do something with the tissues to restart the process. This procedure has a surgical classification, but as long as you are treated by a professional, the side effects are minimal and discomfort manageable considering the pain relief and positive outcome from the treatment.

In over 12 years of practice with Electro Shockwave therapy, I have only had one patient ask for a treatment to be stopped and not able to complete the program, he was sent to me by a very good local Orthopaedic Surgeon with his scans. Following my interpretation, I called the patient to advise where this was it would be more than uncomfortable, he was fine about this. I reminded him again following my examination to his knee, remark was the same (and coincidentally he came in bragging about how much pain he could take!) He reminded me of Samuel L Jackson stature, even the glasses. With the equipment that we now use, think even this gentleman could be treated successfully. For most people, the benefits outweigh the discomfort and as soon as they start to feel the improvement, they are keen to finish the course of treatment. And simply enjoy life, sport or any recreational activities that they have been inhibited from, for many a year in some cases.

## **Why Might Shockwave Not Be For Me (Contraindications)?**

While Shockwave is suitable for a large number of conditions both evidenced and experimental with minimal side effects, there are some conditions, also known as contraindications that means Shockwave is not an option.

Shockwave is unsuitable in the following circumstances:

- If you are pregnant
- If you have a blood clotting disorder (including thrombosis)
- If you are taking oral anti-coagulants
- If you have received a Steroid injection within 6 weeks
- If you have a Pacemaker fitted
- if tumours are present at the treatment site
- if you have an infection or skin abrasion at the treatment site
- if you are Under 18 (except in the treatment of Osgood-Schlatter disease).

Any treatment over an air-filled area such as the lungs or guts is also not possible

This list is of course not exhaustive, and an assessment by a practitioner is always necessary. We know from experience there are certain treatments, conditions and individual histories that are likely respond better or worse to Shockwave, however in every assessment we look at the safety first.

There is an increasing amount of anecdotal evidence from practitioners across Europe and among professional sports teams, that the current recommendation where a condition isn't treated until it's been present for at least 6 months can be reduced. As the risks associated with this are few, people may be tempted to investigate this treatment earlier and some practitioners may agree, however other guidelines have more risks associated with them.

When presenting for one of the industry's leading bodies I'm often asked the example 'is Shockwave suitable in the ankle of a pregnant patient?' The thought being that the local nature of the treatment shouldn't affect other areas, however in this case, the advice should always be no based on the risk vs reward.

Shockwave has a very safe track record because practitioners adhere to the constraints and guidelines. While benefits can be discovered by pushing the boundaries, there should always be a safety first approach and for most of the

general population, the contraindications are in place to protect people.

I was asked to treat a 70-year-old patient suffering from a chronic tendinopathy. I had treated a number of his staff over the years, he ran a natural health clinic on the south coast of the UK, a number of this staff had similar symptoms and had all responded very well to Shockwave so he was very optimistic.

Following an initial telephone conversation, he informed me that he had an Ultrasound scan to evidence the condition and confirm the diagnosis. He also reported a cortisone injection following this scan and I advised that we would, unfortunately, have to wait six weeks before we could begin treatment. The scan did detect a problem, and following a detailed Orthopaedic examination it was clear that we could not proceed, unfortunately the injection caused the tendon to rupture. Had we proceeded with the treatment he would have been in great pain and could have thought the rupture was caused by the Shockwave!

Even with matching symptoms, it's important to be adequately screened to prevent mistakes. The final decision lies with your practitioner. Working with a good team can give you the confidence that they have your best interests at heart.



## **Next Steps**

Most people think the only option to deal with ongoing tendon or joint pain is surgery or living with the symptoms. The good news is, there is an alternative and Shockwave therapy may be your solution to becoming pain free.

This book has helped you discover more about the therapy, but the next step is to get a personal assessment to see if Shockwave is right for you.

### **Fast, Free, 3-Step Shockwave Assessment**

- Visit [www.ShockwaveBook.co.uk/assessment](http://www.ShockwaveBook.co.uk/assessment) and fill out our simple assessment.
- One of our trained team will review your details to assess your initial suitability.
- Schedule a brief follow-up call with our practitioners to discuss your solution.

### **Want to get started faster?**

Call our team on 020 8662 1155 for a free assessment over the phone.

For many people just like you there is a non-surgical way to becoming pain free. I'm excited to see if it's right for you.

## About the Author



As registered Osteopath for over 20 years, I have a special interest in High Performing sports people and have been fortunate to have helped the Sports Medicine World in both Europe and the USA.

We have two long established practices in South London facilitating patient recovery through professional relationships across the region. In addition to my own osteopathic patients I also provide educational leadership programmes to Physiotherapists and Sports Physicians.

In recent years we expanded our excellence centre and established a Shockwave Therapy programme at the practice. One of the few in the area to offer this multi-discipline capability.

Over the last 12 years we have developed a great team that share our core values. I delighted to introduce our team dedicated to helping you become pain free.

## **Become Pain Free, Without The Need For Surgery...**

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