

The  
Stone  
Clinic

# Saving My Ankle

*How to avoid fusion or artificial replacement*

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Find out if biologic solutions to rebuild your ankle can keep you active and help you avoid an ankle replacement.



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# About The Stone Clinic

The Stone Clinic in San Francisco, California is at the forefront of orthopaedic surgery. Headed by world-renowned orthopaedic surgeon, Kevin R. Stone MD, we have spent 30 years pioneering and refining minimally-invasive, biologic treatments to fulfill our mission of keeping athletes active for life.

Every injury is different, every individual unique. We see osteoarthritis not as an incurable disease but as a fixable condition, which is why we design comprehensive, customized treatment programs for each patient to stop the pain and return them to full activity.

We regenerate and rebuild, rather than replace with metals and plastics, using innovative surgical interventions to preserve as much of the natural biology of the joint as possible, often rebuilding with donor tissue to give our patients natural-feeling, long-lasting outcomes that avoid or delay the need for joint replacement.

Our world-class physical therapy and rehabilitation team is onsite and will be with you every rep of your recovery, managing the pace and quality of your outcome with supervision from the operating surgeon, to ensure you return to sports faster, fitter, and stronger than before your injury.



## Meet Dr. Stone

*(Guide Author)*

Kevin R. Stone, MD an orthopaedic surgeon at The Stone Clinic and also the Chairman of the Stone Research Foundation. He is a pioneer of advanced orthopaedic surgical and rehabilitation techniques to repair, regenerate, and replace damaged cartilage and ligaments and a leader in outpatient robotic surgery for joint replacements.

Dr. Stone lectures around the world as an expert in cartilage and meniscal growth, replacement, and repair and holds over 50 U.S. patents on novel inventions to improve healthcare.

Dr. Stone uses anabolic therapy and other biologic techniques to work to preserve the natural biology of a joint, helping people avoid or delay an artificial joint replacement.

He is one of the world's leading experts in minimally-invasive, biologic orthopaedic techniques. For over 30 years, he and his team have specialized in helping people regain motion, reduce pain, and return to sports.

[Learn more about Dr. Stone](#)

[Book a Complimentary Phone Consultation](#)

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# Why rebuild an ankle naturally? Can I avoid fusion or ankle replacement?

## It doesn't have to be this way

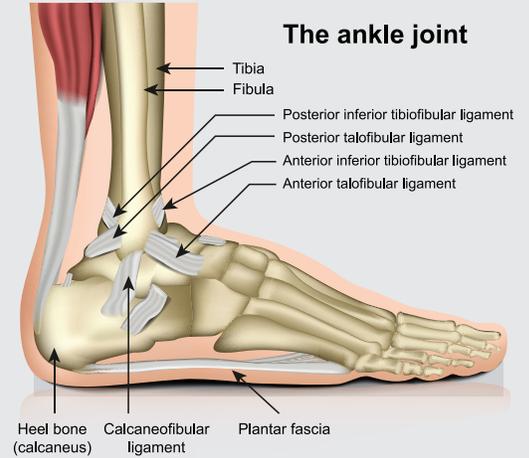
People with severely injured ankles are often told to limit their activities and consider ankle joint fusion or artificial replacement. However, there are biologic alternatives to treating damaged and arthritic ankles. By restoring motion and repairing the damaged articular cartilage and ligaments, ankle fusion can be avoided. Of course, repairing injuries early avoids problems later. However, even in cases with advanced damage, ankles can be saved by carefully clearing away bone spurs and scar tissue while regenerating and rebuilding the articular cartilage and ligaments. This, quite often, allows patients to return to activities and sports.

## Small injuries can trigger big problems

Due to the ankle's complexity and the demand we put on our joints, ankles are commonly injured. We used to believe that most often ankle ligaments would heal well without any intervention. However, we now know that far too often torn ankle ligaments heal in an elongated fashion or with a scar that does not provide the normal stability the ankle requires. Splints, soft-tissue massage, careful rehabilitation exercises, and injections of bioactive factors can speed the healing and reduce the chance of chronic instability. However, some ankle injuries, those that leave the ankle unstable and especially those that damage the articular cartilage covering of the bones, can begin a cascade of problems that if left treated, ultimately, results in osteoarthritis.

## Decades of pain and loss of motion is unacceptable

Most patients diagnosed with ankle arthritis are told that nothing can be done. They are told to take pain medication and anti-inflammatories, lose weight, cut back on their activities, and essentially wait until the arthritis is bad enough to warrant an ankle fusion or artificial replacement. Although an ankle replacement can be a godsend after years of agony, surgeons are reluctant to perform these replacements on people younger than 60 because the parts may not last. When they fail, ankle fusion is the only option. This can often mean an unacceptable number of years of pain.



## ANKLE ANATOMY

The ankle is a remarkable joint. It is relatively small compared to the hip or knee and yet it bears up to five times the entire force with each step depending on the height of the step or jump. While we normally take 2-3 million steps per year at up to five times our body weight, the ankle, unless injured, rarely develops arthritis. The bones of the ankle joint are the end of the shin bone, the tibia, and the top and sides of the talus. These are covered with articular cartilage, which if damaged exposes the underlying bone. Strong, short ligaments attach the bones on each side. The anterolateral ligament (ATFL) is the most commonly torn in twisting injuries resulting from a fall.



Patients diagnosed with ankle instability also have multiple options for ligament repair. The simplest is a modified reefing technique we have refined and leads to a highly stable ankle with a full return to ankle motion and sports.

The articular cartilage injuries and the primary lesions of the articular cartilage osteochondritis dissecans (OCD) are also now repairable through our articular cartilage paste graft technique and should not be left to degenerate on their own.

## **Injections**

Injections of lubricating hyaluronic acid and growth factors from amniotic fluid and blood (PRP) are a part of almost all the ankle treatments today as there is early evidence that they speed healing and improve outcomes by recruiting stem cells to the site of your injury.

## **Biologic solutions can help right away**

Instead of telling our patients with severely damaged ankles to hang in there with pain and loss of motion, we begin pain-relieving treatment immediately. We start with a careful physical examination and review of X-Rays, MRIs, and gait analysis to help assess the source of pain and to decide which combination of nonsurgical, injection, and surgical treatments may be indicated to help regain motion, reduce pain, and return to sports.

## **What is a BioAnkle?**

BioAnkle is our program of biologic treatments to rebuild injured and arthritic ankles. Listed below are several of the surgical treatments that comprise our BioAnkle program.

## **Ankle instability**

Debridement of built-up scar tissue followed by the rebuilding of the unstable ligaments usually provides for excellent stability of the ankle when combined with a guided, early exercise program focusing on range of motion, balance, stability, and strength training. The most common ankle instability is from a loose anterotibial ligament (ATFL). Dr. Stone modified a repair technique to provide a strong ligament reefing surgical procedure that has now been used at The Stone Clinic for thirty years and hundreds of patients. Each repair is now augmented with bioactive factors.



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## Achilles tendon rupture repair

The Achilles tendon is a strong, broad tissue covered in a sheath. When it ruptures the sheath is usually intact with a healing blood clot that forms around the torn ends. Open surgery leads to a loss of that clot, scarring, and a slow recovery. When there's a rupture of the Achilles tendon, our percutaneous suture repair technique has shown to be effective over the last 25 years at repairing the ruptured Achilles tendon without open surgery and returning the patient back to sports. Our long-term data with MRI follow-up on torn Achilles tendons demonstrates that the tendons heal with a normal appearance on a MRI although slightly thicker than the normal Achilles tendon. The procedure is performed as an outpatient under local anesthesia.

## Articular cartilage repair

Articular cartilage injuries such as an OCD lesion of the talus or arthritic changes in the ankle can be treated by grafting the damaged articular cartilage using our articular cartilage paste graft technique. The technique involves the harvest of articular cartilage and underlying bone from the anterior lip of the distal tibia, although sometimes augmented by additional tibial bone, morselizing the damaged articular cartilage or OCD lesion and then packing the graft into the defect. This procedure is followed by four weeks of non-weight-bearing with CPM motion and then four to six months of careful rehabilitation strengthening, balance, and coordination program focusing on soft-tissue mobilization to return to full range of motion. Damaged articular cartilage in the ankle can be successfully regenerated to form a superb repair tissue that can last decades.

Extensive arthrosis with eburnated bone on the distal tibia and talus may require ankle replacement or fusion. However, these are considered last steps after all BioAnkle treatments have been exhausted. The ankle cartilage has a remarkable ability to heal if given the correct stimulus. This may be why primary ankle arthritis without an injury is extremely rare.

## Patient Spotlights

Top athletes are unique people with drive to recover that inspires all of us. They push boundaries and teach us to reconsider what is possible.



**Rich L,**  
**CrossFit Athlete**

**Treatment:** *Achilles Tendon Repair*

Rich is a CrossFit athlete who heard a pop and felt pain at his Achilles tendon. He presented with a palpable defect in the tendon and an MRI confirmed a complete rupture.

Rich underwent the Stone Clinic Percutaneous Achilles Tendon repair where we do not open the tendon. The repair is performed by weaving resorbable sutures through the tendon using small nicks in the skin.

Rich returned to elite level training immediately after surgery by protecting his ankle while he performed a wide range of training exercises under the guidance of The Stone Clinic Rehabilitation team. He returned to full CrossFit exercises at just six months after surgery.

Watch Rich's story





## Is a BioAnkle right for me?

We will be able to assess your personal treatment options only by taking a detailed history of your injury and symptoms, examining you, and carefully analyzing your recent (within 1 year) MRIs and x-rays. However, it may be helpful for you to know what comes into play when deciding whether a biologic solution is right for you. Here's what we consider:

### 1 Your injury history

Twisting of the ankle during a fall or sports is the most common initial way to damage the articular cartilage (the soft surface protecting the ends of your bones) or acute tears of the ligaments (which connect the bones). These acute injuries can most commonly be repaired or the tissue can be replaced. The patient can then return to full activities after appropriate rehabilitation has been completed. We have learned that the success rates of primary repair increase when the injury is treated promptly.

Fractures around the ankle must be reduced to within 1 millimeter of accuracy or, like a car that is out of alignment, the cartilage wears out quickly.

If your ankle injury occurred years or even decades ago, and you have lived with the pain, or have had multiple previous surgical interventions attempting to repair or resect the damaged tissues of the joint, you may need a more complex BioAnkle procedure such as articular cartilage paste grafting combined with ligament reconstruction.

### 2 Your current symptoms

A common scenario for our patients is that they injured their ankle playing sports, had some tissues taken out or a ligament reconstructed, and then over the years developed progressive ankle pain or loss of motion. Their symptoms are often intermittent pain, stiffness, loss of motion, and abnormal gait.

X-rays and MRI's are particularly helpful to determine whether or not the damage inside the ankle is in one portion of the ankle or extensively throughout the ankle. BioAnkle procedures, such as cartilage replacements, can often be performed as long as there is joint space available, meaning that the joint is not completely bone-on-bone.



Patients who are candidates for a BioAnkle often have symptoms associated with pain isolated primarily to one side of the joint and do not have underlying inflammatory arthritis such as rheumatoid arthritis, which differs from injury-caused osteoarthritis. Hardware from previous fracture reductions is almost always a pain generator and is usually removed.

### 3 Your goals

Your goals play a vital role in determining which procedures should be performed. Ideal candidates for biologic repair and replacement of acutely injured tissues are people who would like to get back to sports and who can take the time to do the appropriate rehabilitation. We find that people whose goals are to stay active into their old age are motivated to prevent future osteoarthritis by stabilizing the ankle and repairing the injured tissues.

In particular for athletes who wish to continue impact sports, run hundred-kilometer races, or even run every day of the week, we recommend that they avoid fusions and artificial ankle replacement by opting for biologic repair to keep the ankle moving naturally. We push the limits for biologic replacements to help delay the time in which an artificial component is placed for our high-impact athletes.

### 4 Your approach to recovery

The accuracy of the surgical procedure is extremely important to a successful outcome but equally important is your personal commitment to the rehabilitation program. Most patients who have had arthritic ankles or loss of cartilage over the years have favored their ankle, have decreased range of motion, and have developed weakness in their calf muscles, core, and gluteal muscles due to an abnormal gait pattern that occurs from trying to avoid the pain. A successful replacement of cartilage is only as good as the ability to rehabilitate the entire body so that we can normalize gait patterns and restore the muscle strength. Without this, abnormal forces will continue to wear on the cartilage replacement and the life span of the cartilage replacement will be diminished.

We ask our patients to dedicate at least one hour, and preferably two hours a day, with our rehabilitation team until they have regained maximum motion and strength. We also encourage them to spend at least one hour a day focusing on a strength training and fitness program for the rest of their life.



**Brian B,**

**Injury:** *Post-traumatic ankle lesions and scar tissue*

**Treatment:** *Articular cartilage paste grafting and ligament repair*

Brian presented in 2007 with 15 years of ankle pain after an injury. His exam was notable for dramatic instability and grinding. His x-rays and MRI documented joint space narrowing, cystic lesions in the talus, eburnation of the talus and tibia, and tenosynovitis in the flexor tendons. He underwent an articular cartilage paste grafting procedure for the talus and the distal tibia, removal of extensive bone spurs, and a Stone Modified anterolateral ligament repair in November of 2008.

Brian followed an extensive pool running program and soft tissue mobilization. At his follow-up visit in 2015, he reported that he was asymptomatic and the ankle was doing spectacularly well.

Unfortunately, his right ankle had developed similar findings from his original trauma. He was similarly treated and reported in 2016 that he was doing fantastic.



Our goal is to help you play sports for your entire lifespan. Most often patients stay at our clinic at least one week after their surgery; some stay as long as two to three months working with our physical therapy team for two hours every day for both rehabilitation and fitness training. Our goal is to return you to sports fitter, faster, and stronger than you have been in years.

## 5 Your attitude to treatment

We cannot make a promise or guarantee your outcome but we can tell you that the majority of patients do extremely well. Those that have a complication, problem, or failure have been returned to a successful outcome after the failure has been treated. We have learned that the happiness and motivation of the patient who enters into the clinic environment and into the operating room affect the whole team and the outcome. We encourage you to bring your positive attitude and watch how it influences your outcome.

The beauty of biologic joint reconstruction procedures is that should one of the procedures fail or tear earlier than expected, in most cases, it can be fixed, repaired, or replaced as needed. The attitude of the patient plays a large role in the speed of their recovery. Patients who keep their head in a good place and have a good spirit about it, tend to do the best.

## Conclusion

To keep you active playing sports and enjoying the activities you love until you are 100 years old we need to keep your joints moving. Using biologic and selected bionic replacement solutions combined with dedicated rehabilitation and fitness programs is the way forward.

If you can see yourself as an athlete in training and not a patient in rehab we can achieve the goal to return you to a fitter, faster, stronger version of you.



**Connect with Dr. Stone to find out more about your treatment options**



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