How to Promote Maximum Healing of a Sprained Ankle and Other Soft Tissue Injuries

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The Dynamics of a Sprained Ankle and Other Soft Tissue Injuries

* "How come I'm not getting any better?"
* "Why is this taking so long to heal?"
* "I should've been up and around a long time ago."
* "How come this still hurts?"

These are good questions, questions injured patients often ask me, but unfortunately not always questions that are easy to answer.

I can't always tell patients how long they are going to hurt, how long it will be before they are back to normal. I can, however, give them an educated guess based on my past experiences with patients who have had similar injuries.

The problem is that everyone is different in their ability to heal, and every injury is different in terms of the degree of damage it's caused to the ligaments. Two people with the same injury, therefore, will not necessarily heal at the same rate.

To give you a better idea of why you hurt for as long as you do after an injury, let's look at how soft tissue heals. For this discussion, soft tissue will mean muscles, tendons (these connect muscle to bone), ligaments (these connect bone to bone) and bursas (fat pads between tendon and bone).

The first phase of soft tissue trauma is the acute, or inflammatory, phase. This phase may last up to 72 hours after the injury. The more severe the injury, the longer it lasts. During this phase, a blood coagulation (clotting) system is released which helps minimize blood loss. This clotting system is localized so that widespread clotting doesn't occur.

Concurrently, two chemicals are released that dilate (enlarge) the blood vessels. This results in increased swelling (what's happening is the antigen-antibody system is stimulating cells, which causes inflammation and begins the removal of cellular waste products).

The hallmarks of the first phase of tissue trauma then are: swelling, redness, warmth, and pain (tip: use ice to control the symptoms during phase one - for more information about the use of ice, see my report, Ice and Heat).
After the initial inflammation is gone, the tissue moves into phase II, the repair phase. This stage may last from 48 hours to six weeks (!). The body begins to repair itself by making and laying down collagen (scar tissue). Before that happens, the body sends macrophages (cells that act like the hungry critters in the "Pac Man" video game) that "clean up" the damaged tissue and prepare the area for collagen deposition.

Depending on the severity of the injury, new collagen may continue to be deposited for up to six weeks. So still feeling pain, soreness, and tenderness from an injury four to six weeks after it occurred is not unusual. In addition, collagen has the ability to contract (shorten) between three to 14 weeks past injury and possibly as long as six months. As it shortens, the area of injury will become tighter and less flexible.

Therefore, not moving an injured body part will actually make the injury worse.

If you don't continue to aggravate and reinjure the same area, the damaged tissue moves into the third, or remodeling, phase. This is the time when the collagen is remodeled according to the direction, action, and shape of the damaged tissue. This third phase is the most important one.

Firstly, it's the longest lasting, taking anywhere from three weeks to a year - or longer. Secondly, the maximum strength of the collagen is dependent on the intensity and direction of the forces imposed upon it during this phase. For example, if you do not move a sprained ankle through its normal range of motion and do not exercise it against resistance (weights, rubber bands, etc.), the damaged ligament, when finally healed, will be weaker, tighter, and less able to support your ankle. Your ankle will now be more susceptible to reinjury.

This situation is the same with any damaged bone tissue. Move it, stress it, and it heals stronger. Don't move it, baby it, and it will heal weaker.

The difference between phase 2 and phase 3 is an increase in quantity of collagen in the repair phase and an increase in the quality of collagen in the remodeling phase. There is no marked distinction between the body's laying of this collagen between the two phases; in other words, there are a lot of overlays.

This means you need to begin moving an injured body part as soon as possible, while at the same time avoiding further damage during this movement.

Finally, medical research indicates that ligaments that were injured and subsequently healed after the injury are not as good as a ligament that was never injured. I'll explain:

Normal, never-injured ligaments have Type 1 collagen. The healed ligaments have a large portion of immature Type 3 collagen. This aforementioned research was done on ligaments 40 weeks after they were injured. That's why when you sprain an ankle, you're more likely to do it again. This is also why your ankle may continue to bother you for months after the injury.
The bottom line is that damaged tissue does not heal in a few days. You are not all right after a few days just because the pain is gone.

When you hurt something, ice it, compress it, elevate it, and protect it from further injury. Seek medical attention and do whatever else is necessary to get it out of the inflammatory stage as quickly as possible. Then begin moving and stressing the area without causing further damage.

You should also know that a qualified medical professional can help you get back in the game after the injury occurs much faster than going it alone.

Remember the saying, "Pay me now or pay me later?" As it applies to getting over an injury, you can pay a medical professional for treatment and spend the necessary time and energy to allow your body the best chance for a full recovery - or you can forgo this advice and pay with a lifetime of chronic pain that will never go away.

PART II - ANKLE REHAB PROGRAM

* 1 - Contrast bath once a day
* 2 - Stretch the calf muscle because a tight calf muscle predisposes the ankle to further injury
* 3 - Exercises should be done with NO resistance until movement is normal and pain-free.
* 4 - Once movement is normal and pain-free, use a theraband (a giant rubber band) for the exercises. One you can do the exercises without pain, THEN you can progress to weights.
* 5 - Increase your activity GRADUALLY Use any pain and/or soreness and swelling as an indicator of how much you cannot due. Pain, soreness and swelling are indicators that you've done are doing too much.
* 6 - An air cast or an air stirrup provides the most support. Use it when you begin to return to normal activity. As the ankle feels better, switch to an ankle brace.

* The ankle brace should be made of non-stretch nylon that you can lace up with a figure-8 strap (we sell these, so if you have difficulty finding one, call me at 440-247-1634).

** Elastic wraps provide compression to decrease swelling. They do NOT provide any support.

There are a lot of ankle exercises you can do, but this one gives you the most bang for your buck. It works ALL of the muscles in the ankle.

BEGINNER - Make circles with your FOOT (NOT your leg). Make circles as big as possible, but CAUSE NO PAIN. Do them clockwise and counter-clockwise.

Begin with no weight. Progress to 50 circles clockwise followed by 50 counter-clockwise. When you can do this with no pain and full range of motion, and the circles are easy, progress to the next step, which is:
**INTERMEDIATE** - Add a theraband for resistance (a theraband is a huge rubber band or rubber tubing). Sit on the floor, with your legs stretched out and feet together. Hook the theraband over your feet, then do the circles as prescribed in the above manner (the beginner section; 50 each way, clockwise and counter-clockwise). When you can do this pain free with good range of motion, move up to the next step, which is:

**ADVANCED** - Add weight. Tie a loop through a weight plate (use heavy clothe, or a theraband). Hang this off the end of your foot, then do your circles (just like before, 50 clockwise/50 counter-clockwise). Begin with a 2.5 point weight, and gradually progress up to 25 pounds.

* You will need to sit on a counter or table so the weight hangs freely.

**ANKLE STRETCHING PROTOCOL**
* 1 - assume a comfortable position
* 2 - stretch muscle but DO NOT cause pain
* 3 - hold the stretch for THREE FULL MINUTES

* The length of the stretch is much more important than the intensity.

**STANDING CALF STRETCH**
* 1 - lean into a wall
* 2 - lean far enough to feel a stretch into the calves (stretch both calves at the same time)
* 3 - hold for THREE FULL MINUTES

* If the muscle starts to tighten, cramp or become painful, ease up on the stretch until the tightness, cramping or pain eases, but continue to hold the stretch for three minutes.

**CONTRAST BATH**

A contrast bath helps to decrease swelling, increase flexibility and prevent scar tissue from building up.

* 1 - Fill a bucket up with warm water (100 - 104 degrees)
* 2 - Fill another bucket up with ICE water.

Put the foot in the warm water for five minutes. Move it around as much as possible WITHOUT causing any pain. Move it clockwise and counter-clockwise, as discussed earlier. Also pump it up and down.

Then, take your foot from the warm water and put it in the ice water and just let it sit there for one minute.
Afterward, put it in the warm water for four minutes, moving it around \textbf{WITHOUT PAIN} as prescribed above. Then return it to the ice water and let it sit for one minute.

Afterward, put it back in the warm water for three minutes, again, moving it around as prescribed without pain. Then return it to the ice water for one minute and let it sit.

Afterward, put it back in the warm water for two minutes and move it around as prescribed without pain. Then return it to the ice water for one minute, letting it sit.

Do this contrast bath two to three times a day if at all possible. If you can only do it once a day, do it at the end of the day when you're done walking, running, etc. The bottom line is do it when you know you'll be sitting or lying down for the rest of the day.

\textbf{SEATED STRETCH CALF MUSCLE STRETCH} (do this if you cannot stand because of your injured ankle; if you \textbf{can} stand, follow the instructions for the standing calf stretch discussed earlier)

\begin{itemize}
  \item 1 - sit on the floor or bed
  \item 2 - stretch your legs straight out in front of you
  \item 3 - Hook a towel, belt, crutch, cane, etc. over your foot
  \item 4 - \textbf{GENTLY} pull the foot toward you, far enough back to feel a stretch in your calf but \textbf{DO NOT CAUSE PAIN.}
  \item 5 - Hold for three minutes
\end{itemize}

Do this three to four times a day.