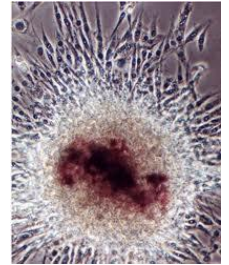
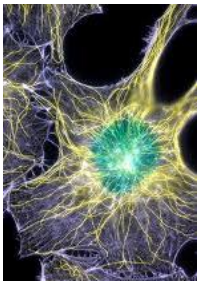


Healing and continuing to live a normal life are mutually exclusive activities. You must choose: Put everyday life on hold and heal; or decide not to heal, and continue normal activities – knowing that your symptoms will become long-term or chronic problems. Any trauma -- even a controlled trauma like surgery – creates a natural cascade of inflammation (swelling) as part of your body's natural healing process. Learning how the body's smallest repair cells work can help you understand the value of adequate healing.

Break a bone and both ends of the fracture are aligned and held stable by a cast, a brace, or surgery pins and plates. Making certain both ends are in close proximity and keeping the surrounding tissues relaxed allows the specialized bone-healing cells called osteoblasts to come to the break and work like a healing factory inside the bones knitting the two pieces together. Enough new bone built successfully shows adequate healing and the bone will function normally. Bone requires 8 weeks to heal adequately.



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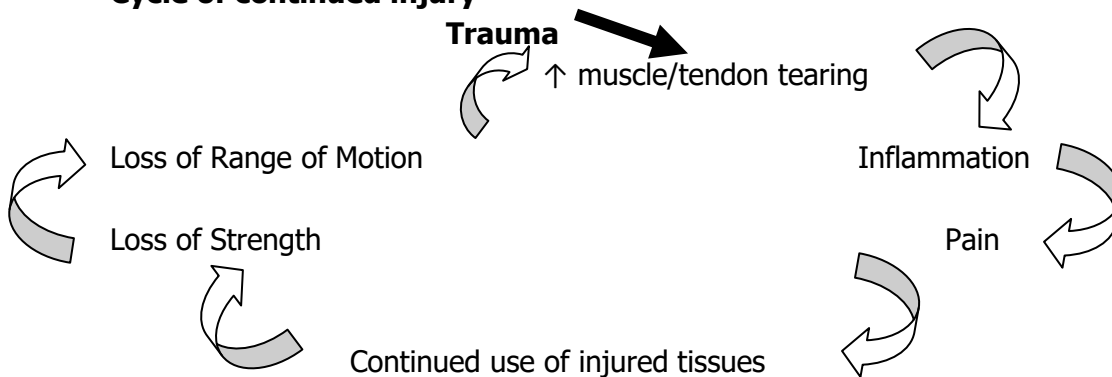


The soft tissue healing cells, called fibroblasts, form connective tissue, and secrete connective tissue proteins such as collagen. Soft tissue healing occurs when fibroblasts migrate to the area of inflammation and knit bridges of collagen, called anastomoses, in the ruptured tissue. If the traumatized torn tissues (skin, muscle, tendon, ligament, lymphatic collecting vessels, veins, arteries) are left close enough to each other for a long enough, they will heal. Soft tissue requires 6 weeks to heal adequately.

Photo credit: <https://www.ucsf.edu/news/2007/01/3786/wittmann>

Whether it's bone or soft tissue, as long as the two torn ends continue to be pulled apart -- as with continued movement of the injured area -- no healing occurs. Any knitting that was previously done is torn apart, creating a new trauma with more inflammation and more pain. To heal adequately, the tissue must rest well enough, long enough. If the cycle of continued injury continues, these acute traumas turn into chronic issues.

### Cycle of continued injury



If the cycle of injury continues, the tissues eventually rupture, pulling away from the bone or one another, requiring surgery to repair the damage. Leaving the injury without repairing it means losing the use of the injured tissues permanently. Other tissues will now be at risk for the same cycle, ultimately ending in a disability. Too often, the end point of the cycle is being placed in a nursing home. Ending the cycle by using appropriate treatment strategies will promote adequate healing so that you can resume your normal lifestyle. Learning to change your behavior and recognize early signs of tissue damage will help you prevent recurrence.

Watching professional sports has become increasingly difficult for me as a Physical Therapist: Observing Kurt Schilling pitch despite a significant ankle injury when I knew he had been patched up enough to play the game was eye-opening. Winning was more important than healing. No wonder patients in the U.S, healthcare system do not heal. When an activity is valued more than healing the body no healing will occur. For example, consider crocheting for hours at a time, ignoring any discomfort. If you push yourself this way, it is similar to running a marathon without adequate training.

## **What can you do to promote healing?**

To promote healing, the first thing you need to do is rest and stop using the injured body part no matter how simple you believe the movement is. While healing, pain may go away so you think it's okay to use the body part. But you will notice pain later-- which means you caused more swelling and the healing process will have to start all over again.

To help heal injured tissues, anything you can do to reduce inflammation and prevent new inflammation in the area will be beneficial. Rest. Use ice, lymphatic drainage massage, and compression with a garment or bandage, and over-the-counter anti-inflammatory meds like ibuprofen (taken according to package directions or your physician's instructions) are all strategies that can help with healing. Resting to allow the osteoblasts and fibroblasts to do their job repairing the damage is the most important treatment for healing. If you keep moving that body part, all the work will be torn apart and will have to start all over again.

Compression helps promote fluid reabsorption back inside the veins and lymphatics. Bandages or compression garments can help your body carry fluids back to the heart. If the swelling is acute you may be able to wean off of using this compression eventually. If you try removing the compression and the swelling returns, you will likely need to continue using the compression to maintain the reduced swelling. To determine if you need to use compression at night, remove the compression before sleeping and assessing the body part in the morning. If it is increased in size or become more painful, you need to wear compression at night.

During the day you want to see the size maintained in the evening/night compared to the morning as well as prevent any worsening of symptoms which indicates you are doing the right amount of activity, treatment and wearing the right amount of compression. If you wear no compression during the day and you swell in the evening it means you need to do more treatment to keep it under control. You can try increasing how often you do the Manual Lymphatic Drainage massage and if this takes care of it then that is your answer. However, if you increase your massage and you still swell, you have to change a different variable i.e. are you doing too much? If so, then you need to rest more. If you are resting and doing the massage at least four times a day then other options would be to increase the massage even more frequently or continue to wear the compression.

Another important treatment is to perform passive range of motion (PROM) to make sure the soft tissues stay stretched out while you are resting them. If this is done with something other than the injured muscles doing the movement it should not cause increased swelling or trauma to the area. For example on an injured shoulder the other hand can carry the weight of the arm or the injured arm can be placed on a counter top or dresser and moving the body away from the injured body part works well. This PROM should be done 4 times a day. One exception is for cancer patients when lymph nodes have been removed. The range of motion is delayed until the fibroblasts have repaired the lymphatic vessels. More will be discussed about this later.

Once the inflammation is well controlled and the tissues have been given an adequate amount of time to heal, the next step to VERY SLOWLY test to see if you are ready to start exercising to gain strength. If the trauma has been less involved it may not take 6 weeks of resting. To test the waters after 3 days of no pain at all try a very small bit of activity no more than a few repetitions of a movement. If the body part remains pain-free the next day then the body tolerated this amount of activity. Then very slow and gradually increase activity as long as no pain increases and range of motion and strength remain without seeing any swelling.

If you continue to use an injured body part and not provide it rest then you are choosing disability. Learning to listen to early warning signs and reacting more rapidly will help you heal faster and prevent disability.