

SWELLING SPECTRUM

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Any trauma that occurs to the body causes an inflammatory reaction. A flood of chemicals known as the inflammatory cascade rushes to the area, just like the paramedics and police officers will rush to the scene of an accident and blockade off the area that has the problem until the scene is clear. This inflammatory cascade of chemicals acts in the same manner. It fills the area with fluid creating a splint for the area and sends signals up to the brain just like flares set out at an injury site warning you of the danger ahead. The brain gets these painful signals and tells the body to stop trying to use the injured area. Some of the chemicals that rush to the area act like the paramedics-helping to heal the area and some act like the clean up crew once the injured victims are removed.

This inflammatory reaction occurs as a response to any trauma in our body, be it an accident like a car accident, bad skin tear from falling down, breaking a bone, burn, bug bite or pet scratch, gardening injuries, or rough-housing injuries. Other types of trauma that causes inflammatory reactions are those that are voluntary such as surgery, radiation treatments or tiny traumas such as getting a shot. Regardless of the cause, our body responds in the same way, it sends a signal out and calls the inflammation to the area.

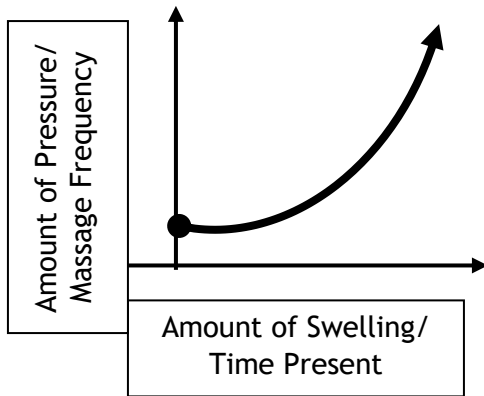
This inflammation is good in that it helps to heal the area, but it is also the main cause of our pain and often becomes a problem that stays around. After a fracture, once the bone is set in place and we leave it alone, the bone heals. However, if inside the cast we are not completely still at the area of the injury we continue to cause the fracture to open back up. The same thing happens with soft tissues that get injured-such as muscle, tendons, ligaments, and skin. If we keep using an injured area and ignore the signals the body is trying to give us to let it heal adequately, then we keep ripping those injured tissues that are trying to knit back together with cells that act like little knitting needles (fibroblasts in soft tissue and osteoblasts in bone). This virtually creates a new injury and the signal gets sent out to call more inflammatory chemicals to the area.

Typically it takes soft tissue 6 weeks to heal adequately and bone 8 weeks. We are patient for healing for perhaps $\frac{1}{4}$ of that time and then we get bored with resting and icing. We get so anxious to get back to our lives that we keep causing repeated new injury and then we are upset that we still have pain. The body does not care that your garden needs tending, family needs feeding, or house needs cleaning. It works in a very specific way and when you recognize this and respect the work it is doing and tend that garden you can stop prolonging the injury and get the body part healed and back to a normal life. It is best to learn from the previous injury. If you fell because you were not paying attention, then pay more attention. Or if you fell because you have bad balance and do not want to use a cane, use a cane or go see a therapist to learn how to improve your balance.

Other causes of swelling can be less obvious such as having lymph nodes removed from surgery (due to cancer) or simply getting older and having the skin and veins stretch out. Trauma from an accident or injury that stays in an area much longer than it should puts extra pressure on the skin and stretches it out. When the skin loses the ability to tighten back up it virtually turns into a flop house allowing more unsavory characters to hang out and become problematic. More water and protein molecules are allowed to stay outside in the interstitium or tissue spaces rather than getting back inside the vessels to get carried back up to the heart. This occurs because of the mechanical damage to the structures that help carry fluid back to the heart, the veins, lymphatic vessels and nodes and even the tightness of the skin. When those things (lymph nodes) are

removed or damaged badly enough they will let the fluid stay in the area and the swelling begins. Initially it is a very small amount, so small no one really knows it is there. But over time, it fills the area. Eventually it starts causing the skin to stretch even more and the swelling becomes more obvious. Swelling in a body part that is outside of a joint is actually called edema, but we will use the term swelling for the sake of education.

Since we age from the time we are born and we all have soft stretchy skin-we are all at risk for developing swelling across our lifetime. If we manage to heal adequately and resolve the inflammation then it will take us a lot longer to see swelling problems that will stick around. However, if you have a lot of trauma to your body in your youth, it will likely catch up with you in your older years when the skin is so stretched out it can no longer keep the fluid pushed back inside the vessels to be carried up to the heart.



Basically, we are all on the swelling spectrum, most of us are on the bottom edge and do not realize there may be a problem until we get to the middle or top edge of the curve. There are several techniques or tools you can use to help manage swelling. It is your decision when you want to jump in and control the mechanical damage that has occurred. If you have a trauma that starts the swelling, the more RICE (rest, ice, compression, elevation) you do immediately after the injury the less fluid you will create and the faster it will go away. The longer you take to finally rest well enough and long enough and do the treatments to resolve the swelling, the

more stretching you caused to the skin and the sooner you will likely see swelling that will not resolve. You might be 50 instead of 80 years old, but it will likely catch up. If you have surgery to remove lymph nodes or stripped veins, once the body can no longer keep up with the fluid levels that are present you will see swelling.

Doing a simple massage technique-Manual Lymphatic Drainage-to help pull (suck) the fluid back up to the heart and using compression (socks or stiff wraps) can dramatically help move fluid out of the area and prevent it from staying in the area of injury. The more fluid is present and the longer it stays, the harder it becomes to get it out of the area and the stronger amount of compression you will need to keep it under control. If you wait so long that you become a water balloon, it will take several times a day of doing the massage technique and it will take much tighter compression to overcome the fluid and keep it pushed into the tubes. Recognize swelling early and do something about it quick to make it easier to manage.

After breaking a leg when I was 13 years old, at 44, I found that if I did not wear compression stockings after about 5 days I got knee pain again. So for me every morning is a choice. If I want to control the knee pain and prevent the swelling from worsening, I put on compression socks. I am able to use a very light amount of compression. But daily I see people who have a water balloon for a leg and this encourages me to keep using my socks so I do not get that bad. I have worked with people who have such stretched out skin and the fluid pressure is so strong they have to wear a compression sock in the shower so they can get their sock on afterwards. They also have to wear a sock that is at least 3 times stronger than mine which means it takes 3 times the effort to put it on. It feels about like trying to put on a wet-suit. Me, I will stick with my easier to get on sock and prevent the knee pain and swelling. Prevention really is a gentler road to take-but it is your choice.