



About the Author: Steven Tham MS, DC is the Director of patient and client education for the Pneumex Corporation. Pneumex is a leading company in the development of Rehabilitation equipment which is used in numerous clinics, hospitals and rehabilitation facilities around the world.



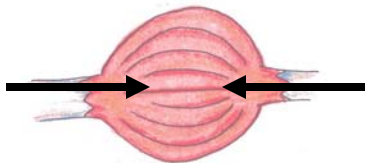
He is also the Director of Rehabilitation at the FASTER clinic of Sandpoint, ID (www.fast-center.com) which is the Premier Research and Development site for Pneumex. It is here that new pieces of equipment and rehabilitation protocols are developed and used.

He has a Master's of Science in Human Nutrition and a Doctor of Chiropractic Degree, however his interests are specifically in physical rehabilitation and strengthening as it pertains to spine and spinal injuries.

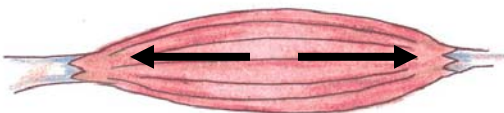
Scar Tissue And its Long lasting effects



Normal Muscle Tissue is made of cells that are oriented in a single direction



Normal Muscle at contraction will contract evenly to produce maximal force



Normal Muscle when stretched there is no areas of adhesion and the stretch is even throughout the muscle.

Many of us have heard the term "scar tissue" used at some point in time as it relates to rehabilitation and injury. Perhaps you were in high school as a casual athlete or played for the pros. Even if you weren't an athlete, have you ever fallen off a bike? Twisted an ankle? skinned a knee? had a surgery? or bruised any part of your body? If you answered yes to any of these, chances are you have some sort of scar tissue in you.

Scar tissue occurs when skin, muscles or organs get injured. On the surface, the body is not able to reproduce healthy tissue, so when an injury occurs, it forms thicker tissue than normal which serves two purposes. The first is that it is protective of the injury site and prevents dirt and particles from entering, and the second is that it immobilizes an area much like a cast would if you were to break your arm and allows the area to heal.

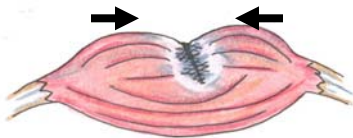
Scar tissue is randomized, fibrous tissue that can form in as short time periods as 12-24 hours. Scar tissue also tends to be thicker and denser than the surrounding tissue and appears paler in color due to limited blood supply in the area. The best course of action to reducing scar tissue formation occurs within

the first 72 hours of an injury. Rest, Ice, Compression and Elevation (RICE) along with proper therapy can significantly reduce the problems of scar tissue and significantly decrease healing times.



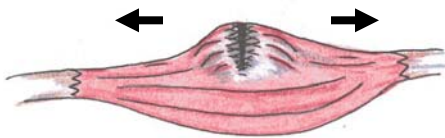
Scar Tissue occurs as a result of any injury, even if no open wound is noticed

But what happens if you already have had injuries in the past that were never quite taken care of? The problem with scar tissue in the long term is that once it is formed, it binds itself to the damaged area in a scattered and criss-cross pattern.



Scar Tissue causes an uneven and unbalanced muscle contraction.

When we are younger, we are able to accommodate for all the little biomechanical changes that occurs in our bodies. As such, if one area is injured, we can utilize another muscle to fill in. As we get older, the ability to do this becomes much more difficult and it gets to the point where permanent changes can occur. Once this happens, we start feeling aches and pains despite not "over doing things" and we seem to have a hard time getting better from injuries. Over time, it becomes very difficult to undo these changes because the purpose of scar tissue is to immobilize a damaged area and unless it is properly rehabilitated, it continues to do so long after the initial injury.



Scar Tissue causes the muscles to not be able to stretch fully resulting in loss of flexibility

Muscles are extremely sensitive to scar tissue because muscles are fibers oriented in one specific direction, so that the fibers actually slide one over the other. When scar tissue occurs, the fibers can no longer slide as the muscle contracts and what occurs is uneven muscle contractions and an inability to stretch properly. This results in an asymmetry of the muscles, reduced flexibility, reduced strength and an increased likelihood of re-injury. The person will also be more prone to injuring other areas in the body as they try to compensate for this weakened and damaged area.

Even if you have had the problem for a while, the question is, can anything be done? The simple answer is yes. Although alterations to the body tissues have occurred, it is not too late to fix these problems. Certainly the longer the problem has existed, the more work will need to be done, however there are a few simple rules that will bring you a long way.



The first is that you will need help. This is something which only a trained doctor, physical therapist, chiropractor or rehabilitation specialist can help you with. The longer the problem goes unchecked, the more biomechanical changes will occur and this includes alterations to how the muscles fire, alterations to posture and alterations to gait (or the way we walk). All these will need to be addressed before normal function occurs and pain is relieved. These problems **NEVER** resolve by themselves and in most cases medication does nothing more than mask the pain instead of resolving the problem.

At the FASTER clinic, we utilize the specialized Pneumex mapping system to correctly evaluate a patient's posture, along with our unweighting systems which remove weight off a patient to allow us to fully evaluate how a person walks. A specialized computer posture program tells us how to position the Pneu-back chair that allows us to isolate specific muscles and retrain their firing so as to remove and reduce bad postural habits. Gait corrections are accomplished with the Pneumex gait foot straps as we progress through a comprehensive CORE strengthening program.

The second thing to remember is that no matter what type of therapy we do, the flow of blood into a damaged or weakened area is crucial for healing. Ultrasound modalities use the sound waves from the sound head to promote blood flow by producing small amounts of "friction" as the sound waves meet muscle, ligaments, tendons and bones which causes the area to heat up and thus promote blood flow. Electric muscle stimulation machines and Interferential machines use a similar idea but by involuntarily contracting the muscles, the body squeezes blood in and out of that area. In both cases, the area of treatment is relatively small and is limited by the machines themselves.

Pneumex has developed a very nice solution for this problem through the use of a vibration platform. Studies have shown that vibration has many positive effects on the body. There is an increase in body-wide blood flow, blood return and lymphatic drainage, which acts as a filter for part of the blood. The other effects of vibration is that it relaxes muscles, relaxes tendons and prevents the body from contracting against and fighting the work that is being done by the therapist. This allows us to not only increase blood flow into a damaged area and promote healing but also to break scar tissue and stretch areas with much greater efficacy than traditional therapies.

The last thing to remember is that once scar tissue has been broken, it is very important to start the process of strengthening and getting the muscle fibers re-oriented so that they can smoothly contract and stretch. This process includes not only working on the affected muscle group but also the other muscles that surround the area. Only a trained professional can guide you through this process.

At the FASTER clinic, our goal with scar tissue is to not only rehabilitate the affected area but also fix all changes that occur as a result of it. By doing this, our patients are restored to optimum pain-free health and function. We utilize all the specialized pieces of equipment to facilitate proper rehabilitation of the entire patient from muscle to ligament to joint to posture and finally to function. Our staff is fully trained, knowledgeable and willing to help our patients through this process.

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