Ligament Laxity as a Cause of Foot Pain

Virtually anyone who is athletically inclined, and even one who is not, will at some point experience an injury or pain in their foot or ankle. We all know someone who has sprained a foot or an ankle while walking or running. There is a good chance that one or more of the ligaments in the foot were injured or just plain gave out. We, who are not athletes, may also experience that deep nagging hurt in our foot or ankle that won’t go away. The probable cause of this pain and discomfort is due to the weakening of our foot ligaments either because of the type of work we do, our health, or just due to the fact that we are getting older and our ligaments are too.

What is a Ligament? A ligament is a band of fibrous tissue that connects bones or cartilages together and serves to support and strengthen the joints. The main role of the ligaments is to connect bones at movable joints; without them, the skeleton would fall apart. Because of their dense nature, they have a poor blood supply and are therefore not highly proliferative when it comes to regeneration. Ligaments need to be tough and unyielding, but at the same time flexible and pliant, to offer no resistance to normal movements. They are elastic within normal limits and are protected from lengthening excessively by the muscles’ natural contraction. In this picture of the ligaments, you see “ATFL” that stands for Anterior Tibial Fibular Ligament, one of the many foot ligaments.

The main purposes of the ligaments are to hold the skeleton together and to stabilize the joints. When subjected to trauma, poor posture, or repetitive stress, the ligaments can become permanently stretched. This, in turn, makes the joints unstable. The unstable joints are then subject to pain at the joint and, frequently, distant to that joint. Often, patients suffering from pain due to ligament laxity will experience relief from adjustments, acupuncture, and physical therapy. But many times, that pain recurs and becomes chronic.
The common cause for injury to a ligament is when the joint is overextended in a direction it is not intended to go, or when it moves further than the ligament allows. Any ligament holding bones or cartilage together at a joint can be twisted, torn, or otherwise damaged by a fall or other injury.

A sprain to the ligament is when the dense fiber of that ligament has gone beyond its normal elastic limits. Ligament injuries can range from just local tenderness at the site of injury to a complete tear of one or more ligaments. A grade #1 (mild) ligament injury shows no measurable stretching of the ligament, but there is local tenderness at the site of the injury. A grade #2 (moderate) ligament injury has tenderness plus some stretching or a partial tear in the ligament. A grade #3 (severe) ligament injury is a complete tear of the ligament and also joint dislocation.

Will a stretched ligament heal itself? A stretched ligament does not have the inherent ability to regain its previous length. A common analogy is the plastic that holds a six-pack of your favorite cold beverage together. You pull or stretch that plastic out and it does not stretch back or reform its original length (unlike a rubber band). So, once the ligament has been stretched, it does not have the ability to hold the joint it was supporting in the proper position. This will lead to repetitive micro traumas to the joint in question that will further damage it, causing a host of other degenerative conditions over time. These include arthritis, tendinitis, bone spurs and/or compression fractures.
**What is a lax ligament?** Ligaments that are not holding their joints together properly can be called lax. Ligament laxity may cause chronic pain that can go on for years without receiving a proper diagnosis. It frustrates the patient and also the treating practitioner. The chronic pain may be due to ligament laxity that has resulted from an overlooked injury. Practitioners who are familiar with this condition can diagnose ligament laxity by performing appropriate physical exams, primarily passive stress testing of the involved joint.

In the case of the foot and ankle, for example, the following testing methodologies for lax ligaments in each region of the ankle would be performed: Valgus and Varus Stress Tests of the ankle along with the Drawer Test. These and other diagnostic evaluations will allow us to determine ligamentous strength and joint integrity.

**What does the body do with a lax or loose ligament?** The body recognizes the misalignment, or subluxation, by trying to splint the joint. The only way that can happen is with muscle spam and pain that is referred to as **guarding**. Stabilizing the joint and reducing the muscle spam will aid in the healing process. In many ways, physical adjustment of the joint and muscle relaxing techniques of a misaligned joint may influence joint neurophysiologic function. These may include disruption of collagenous adhesions, restoration of proprioception, reduction of muscular contracture, and prevention and/or reversal of degenerative changes.

**Why is proper joint alignment necessary?** When the joint is in proper alignment, those ligamentous fibers are positioned to allow for optimum healing. When the ligaments heal with the joint in proper alignment, the joint will be more stable and durable to withstand the normal and everyday forces that the feet encounter. Ligaments hold joints together, and when they are holding the joint in proper alignment, that joint is prepared for the next movement it will make.
On the other hand, a joint not in proper alignment will shift one way or another before it is able to make that movement, and that extra shifting causes stress on the articular surfaces of the joint, which may lead to advanced degeneration to the joint. Also, the misaligned joint will not be putting pressure equally on the surface of the joint, which may lead to the formation of bone spurs. The bone spurs form because of Wolff's Law, which states that extra bone is deposited in stress lines and removed in areas in which stress is not applied.

**What is an effective treatment for lax ligaments?** One of the best holistic and non-surgical treatments for lax ligaments is prolotherapy. Ligament enhancement therapy also known as prolotherapy involves injecting the lax ligaments with a solution, which may contain sugar water, a local anesthetic, and highly refined cod liver oil. A newer and promising solution is the body’s composed of the patient’s own platelet cells that are extracted at the time of the prolotherapy procedure. Researchers using before-and-after microscopic exams of the ligament have shown that proliferative therapy injections actually repair the damaged ligaments and restore them to health.