

Restoration of Joint Stability with Matrix Repatterning

The Role of ‘Sacrificial Joints’

By Dr. George Roth, DC, ND

Over the years, I have often noticed that athletes, from professionals to weekend warriors, are outfitted with some rather unusual equipment in order to compete or participate in their designated sport. For some, it consists of multicolored, neon tape adorning their shoulder. For others, it is a knee brace, whether in the form of a tensor bandage or an elaborate ‘Robocop’ affair, complete with stainless steel hinges and reinforced stays, or various types of wrist and ankle supports. Many people, even non-athletes, wear lumbar supports and back braces to deal with low back pain and disc-related injuries.

From time-to-time, people from all walks of life find the need to overcome painful and limiting conditions, through the use of assistive devices to support painful and unstable joints. These devices come in all shapes, sizes, colors and designs, but they all have one thing in common: they are designed to stabilize and limit movement in a particular part of the body because, for some reason, the joints in that area have lost their ability to function in a normal, pain-free manner. Certain joints are more likely to be affected in this way, and as a result, may be more prone to the development of degenerative changes, including osteoarthritis (OA). The knee, hip, shoulder, lower lumbar and cervical spine, and certain interphalangeal joints are most commonly affected. OA is a general diagnosis, which may be the result of a variety of causes. Mechanical stress on the joint may be one of the factors, and joint instability may be associated with certain types of OA ¹. I have found, as have many other clinicians, that joint instability is often present in the lumbar spine, knee or shoulder. Interestingly, these joints are also very susceptible to the development of OA. The question I have asked myself over the years is: *Why do these joints become unstable?*

A Surprising Result

About 20 years ago, a patient came to see me regarding a condition of low back pain. He also happened to mention that he was scheduled for knee surgery to repair the ACL. As part of my examination, I checked his knee stability. I noticed that it was extremely unstable, but thought nothing more of it. I proceeded to treat him using a new technique I had been developing, called Matrix Repatterning (MR). I found a number of injury patterns associated with the lower extremities, the pelvis and the thoracolumbar spine and rib cage, and treated these accordingly. A few weeks later, after a series of about six sessions, the patient reported that his back pain was gone. He also happened to mention that his knee also felt much better. “As a matter of fact,” he stated, “when I went back for my pre-operative examination with the surgeon, he checked my knee and couldn’t find anything wrong with it anymore. He said that he didn’t know why I was told I needed surgery in the first place!” I didn’t know how to respond, but decided to go ahead and recheck his knee stability. It was perfect!

That case got me thinking. How had his knee regained stability? Did my treatment have anything to do with the improvement? I started monitoring knee stability in my patients, and noticed that it often improved when I treated certain areas of the body. Slowly, a pattern began to emerge demonstrating a rather consistent association with injuries, in other areas of the body that somehow seemed to be associated with knee instability. Once these areas of focal tissue injury, which I refer to as *primary restrictions*, were resolved, unstable knees would become stable. ... and

stay that way. At the time, other than observing this rather startling clinical manifestation, I had no way to explain the mechanism of improvement.

A New Theory of Joint Stability Emerges

Several years later, a podiatrist came to see me for his chronic knee pain. As I performed my initial assessment, I was able to demonstrate how his knee instability was directly associated with an injury to his pelvis. As I positioned the magnetic field device (Matrix Scanner¹) used to determine the location of primary restrictions, on his pelvis, he was quite astonished that I was able to immediately restore the knee stability. “How was that possible?” He asked. In the past, I had considered some type of compensatory alteration in the tensile properties of the ACL and PCL. But this was an immediate change, and I could not understand how ligaments that had been lax could suddenly increase in tone. And, here was a fellow health professional, someone highly respected in the field of podiatric medicine, and who worked closely with a number of orthopedic surgeons. I needed to consider my explanation carefully.

I considered the evidence:

1. The knee was initially profoundly unstable.
2. Temporarily neutralized the restriction in pelvis, using the scanner.
3. The knee instantly stabilized.
4. I removed the scanner.
5. The knee once again became unstable... instantly.

I thought: *what works that fast in the body?* Could it be a neuromuscular response? What muscle could possibly be affecting stability of the knee? How was this response being mediated?

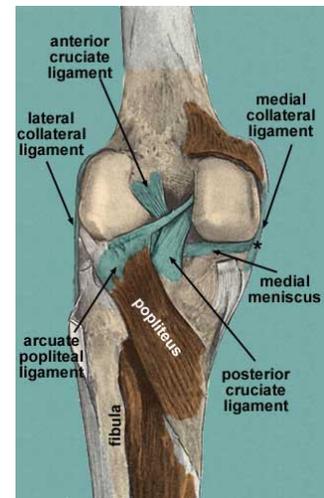


Figure 1: Knee stability provided by popliteus muscle.

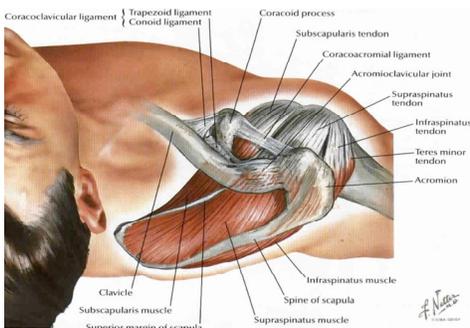


Figure 2: Shoulder stability provided by supraspinatus muscle.

Recent studies have postulated the popliteus as an important dynamic stabilizer of the knee^{2, 3}. It is intricately attached to several internal structures of the knee, including the lateral meniscus, the posterior capsule of the knee, the PCL and the MCL⁴. I decided to look into the possible role of this muscle on the function of the knee. I also decided to investigate the possible role of appropriately targeted treatment, such as Matrix Repatterning, which might help restore stability to the knee, and thus promote healing of this joint.

The typical clinical approach to an unstable knee is through exercise of the large muscle groups, or if all else fails, surgery for the so-called

¹ Matrix Scanner: Proprietary Device (magnetic field device), used to localize areas of reduced electrical conductivity associated with tissue injury. The applied magnetic field appears to induce electrical current in the affected area, reducing local tissue restriction. Due to continuity of fascial structures via the cytoskeleton and the extracellular matrix (ECM), this change in tissue tension allows the practitioner to determine the precise location of primary restrictions (PR's).

“torn ACL or PCL”. The purported incidence of actual tears of these ligaments appears to be much less than indicated by radiological reports. Surgical reports often contradict the findings of radiologists in these cases ⁵. Recently, I have also discovered that anterior instability of the knee is often accompanied by reduced tone of the biceps femoris, and that treatment of the pelvis, often restores tone in this muscle along with knee stability, as measured with an anterior drawer test. Additional muscular and fascial associations appear to mediate ankle stability. In the shoulder, a similar mechanism has been identified regarding the possible role of the supraspinatus and teres major and/or minor as stabilizers of the gleno-humeral joint (see: Figure 1, above) ⁶.

Joint Instability as a Symptom of Core Injury

The Matrix Repatterning assessment is designed to determine the location of focal areas of tissue restriction, referred to as primary restrictions (PR's). PR's are often located in areas of the body remote from the area of symptoms, which may be compensatory to the effects of the PR's. As I reviewed the areas containing the primary restrictions that seemed to be associated with joint instability, I noticed that they were invariably located in the torso and pelvis – the so-called *core structures* of the body. Treatment of these areas usually resulted in restoration of stability in the involved joints, which appeared to occur primarily in *peripheral* joints. The one exception was the lumbar spine, which is located in the core region. But this one exception, proved to be a key to my understanding of this important mechanism.

I postulated that the purpose of instability was to protect the *core* structures from additional mechanical strain and potential debilitating or even life-threatening damage. In particular, I reasoned that one of the primary goals of this protective mechanism might be to protect a particularly vital structure, namely the spinal cord. The knee, ankle, shoulder and wrist joints, completely dependent on soft-tissue for stabilization, could serve the role of “*sacrificial gears*”. This is a term used with industrial machinery, such as printing presses, where specific gears constructed of less robust materials, are situated at non-critical points in the device. These are deliberately designed to fail and disintegrate should the machinery become severely compromised, thus protecting more critical components.

Could the unstable joints in fact, be *sacrificial joints* (see: Figure 2)? But, what about the lower lumbar spine? The spinal cord is a key core structure that must be protected, however as we know, the spinal cord ends at the level of L2 or L3. Thus, the neurological structures of the lower lumbar spine (cauda equina), composed of separate nerve tracts, each protected by the meninges, are much less vulnerable to serious damage. Lumbar stability appears to be related to the influence of multifidus and rotatores tone, as confirmed in recent studies⁷. Correcting primary restrictions in key core structures, such as the thoraco-lumbar spine and pelvis tends to turn these muscles back on, thus restoring stability and allowing for improvement articular in stability and potential resolution of lumbar dysfunction.

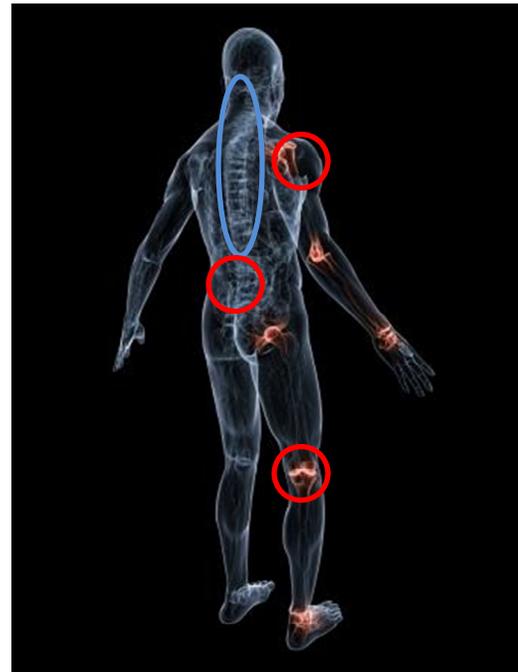


Figure 3: Sacrificial Joints (red), Core Structures (blue).

An Emerging Paradigm in Structural Therapy - Turning Joint Stability Back On

Matrix Repatterning is a gentle form of manual therapy, based on a recent understanding of the ultrastructure of the body, specifically the intracellular and extracellular matrix, and their influence on structural, mechanical and physiological properties of the body. The basic premise is that gentle manual therapy applied to areas of the body identified as primary restrictions, can help to restore the functional capacity of tissue, restoring its elastic and electrochemical properties ^{8, 9, 10}. Primary restrictions are often located in the deep core structures within the skeletal frame (referred to as *intraosseous* lesions), and the fluid-filled thoracic and abdomino-pelvic areas, directly related to the spine, pelvis and rib cage. These injury patterns are often associated with impact injuries, such as falls, sports injuries, and motor vehicle collisions.

Remarkably, treatment of primary restrictions, often located in remote parts of the body, using Matrix Repatterning, appears to immediately restore stability in certain joints. What could account for this response? It is my current theory that there may be a feedback mechanism, mediated by spinal reflexes or mechanical-electro-chemical signals generated within the extracellular matrix (ECM) ¹¹. These systems may be able to monitor potentially threatening injuries, and respond by triggering inhibitory or excitatory efferent neurons (spinal/neurological level), or via the production of electro-chemical signals to activate specific tonal structural proteins within the ECM. Whatever the mechanism may be, it appears to allow the body to rapidly modulate stability of the peripheral, appendicular joints, as well as – notably – the lower lumbar spine.

Practitioners, trained in Matrix Repatterning, have confirmed that joint stability is often restored when the underlying primary restrictions are properly addressed. In this way, they have been able to help many conditions associated with joint instability, resulting in significant clinical improvement. Further research is also required to assess the effectiveness of this approach on the possible reversal or prevention of degenerative changes associated with these joints.

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