

# **PROLOTHERAPY**

***Some answers to  
your questions***



**“In Today’s World, No One  
Should Live With Pain!”**

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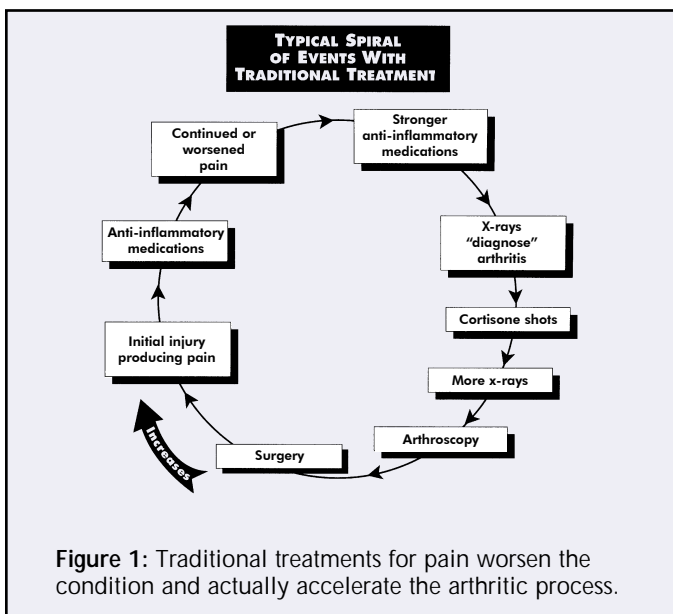
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## Pain: It Is Not an Ibuprofen Deficiency

Pain is not, and never will be, an ibuprofen or any other anti-inflammatory medication deficiency. If this is true, why are millions of people taking these medications every day for their chronic pain? Instead of masking the pain with drugs, why not receive a treatment that stimulates the body to **repair the painful area**? Perhaps the reason for this is because the usual course of events in treating chronic pain by traditional physicians, pain clinics, and sports rehabilitation centers is to first treat the pain with non-steroidal anti-inflammatory medications (NSAIDs), then with cortisone shots, eventually progressing to arthroscopy, and when the painful condition persists, some type of surgical procedure. This scenario is all too real for many people! (*See Figure 1.*) The problem with this approach is that all of these traditional treatments weaken the body, increasing the likelihood of future injuries and chronic pain.



**Figure 1:** Traditional treatments for pain worsen the condition and actually accelerate the arthritic process.

## Pain: An Indication of a Problem

Pain, in many respects, is a God-given gift. A gift you say? Yes, pain alerts the body of a problem. Simply put, pain is due to weakness. Pain in the lower back, for example, indicates that some structure in the lower back is weak and needs to be strengthened. This is why suppressing the symptoms of pain with NSAIDs, cortisone shots, or allowing a surgeon to scrape away meniscal or cartilage tissue with an arthroscope is dangerous. If the condition causing the pain is not stopped, the underlying degenerative process will continue. If left unchecked, systemic connective tissue deficiency leading to multiple areas of ligament and tendon relaxation will occur.

## Chronic Pain: Look for Ligament and Tendon Relaxation

“Ligament relaxation is a condition in which the strength of the ligament has become impaired so that a stretching of the fibrous strands occurs when the ligament is submitted to normal or less than normal tension.” George S. Hackett, M.D., made this statement 40 years ago and believed chronic pain was simply due to ligament and tendon weakness in and around the joint. Dr. Hackett coined the phrase, “ligament and tendon relaxation,” which is synonymous with ligament and tendon weakness. He later coined the term, “Prolotherapy” and developed the procedure as a treatment for chronic painful conditions.

## Strain Versus Sprain: What is the Difference?

A *strain* is defined as a stretched or injured *tendon*. A *sprain*, on the other hand, is a stretched or injured *ligament*. A tendon attaches a muscle to the bone, whereas a ligament attaches bone to bone.

Ligament and tendon injuries often do not heal because these structures have very poor blood supplies. Perhaps even more importantly, their healing is slowed or even stopped by - you guessed it - NSAIDs, cortisone shots, and more importantly, the **R.I.C.E.** treatment. **Rest, ice, compression and elevation** inhibit healing, whereas the **M.E.A.T.** protocol, consisting of **movement, exercise, natural analgesics (proteolytic enzymes), and specific treatments like Prolotherapy, stimulates healing.** (See Figure 2.)

<b>R.I.C.E. versus M.E.A.T.</b>		
	<b>R.I.C.E.</b>	<b>M.E.A.T.</b>
Immune System Response	Decreased	Increased
Blood Flow to Injured Area	Decreased	Increased
Collagen Formation	Hindered	Encouraged
Range of Motion of Joint	Decreased	Increased
Complete Healing	Decreased	Increased
Speed of Recovery	Delayed (Lengthened)	Hastened (Shortened)

Figure 2: The RICE protocol hampers soft tissue healing whereas MEAT encourages healing.

*Webster's Third New International Dictionary* defines Prolotherapy as “the rehabilitation of an incompetent structure, such as a ligament or tendon, by the induced proliferation of new cells.” Prolotherapy involves the injection of substances at the sites where ligaments and tendons attach to the bones, thus stimulating the ligaments and tendons

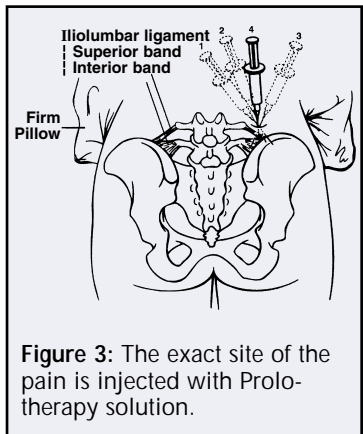


Figure 3: The exact site of the pain is injected with Prolotherapy solution.

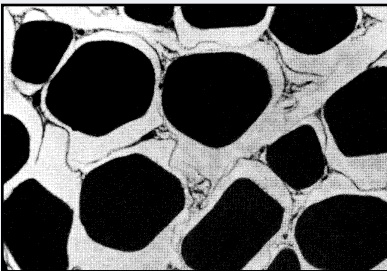
to proliferate or grow at the injection sites. This area is called the fibro-osseous junction. “Fibro” means fibrous tissue that forms the ligament or tendon and “osseous” refers to the bone.

Prolotherapy, therefore, stimulates the body to repair the **exact site** of the painful area. (*See Figure 3.*) Prolotherapy works because it addresses the root cause of chronic pain: ligament and tendon weakness.

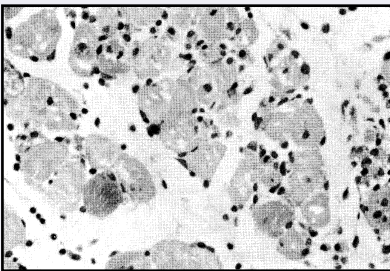
## Prolotherapy Stimulates the Normal Healing Inflammatory Reaction

Most people are shocked when they find out that the body heals by inflammation. Yes, God made the body to heal by **one way only**...inflammation! Inflammation is the process whereby the immune system is activated to help the body restore homeostasis or balance. Prolotherapy injections cause immune cells to arrive at the injury site to repair it. (*See Figure 4.*)

### PROLOTHERAPY STIMULATES INFLAMMATION



NORMAL  
MUSCLE  
TISSUE



MUSCLE TISSUE 48  
HOURS AFTER  
PROLOTHERAPY:  
Injections with 12.5%  
Dextrose in 0.5%  
Xylocaine.  
Notice the massive  
inflammatory reaction—  
the basis of  
Prolotherapy.

Slides prepared by Gale Bordon, M.D., from K. Dean Reeves, M.D. Used with permission.

#### Figure 4: *Prolotherapy Stimulates Inflammation*

Prolotherapy stimulates the natural healing mechanisms of the body via inflammation.

Once the injured tissues achieve normal strength, the chronic pain is eliminated. Prolotherapy injections have been shown to significantly increase ligament mass, thickness, and strength. (*See Figure 5.*) Prolotherapy outperforms all other treatments such as NSAIDs, cortisone injections, and surgery. (*See Figure 6.*)

The Effects of Five Prolotherapy Treatments to the Medial Collateral Ligament			
	Prolotherapy-Injected Ligaments	Saline-Injected Ligaments (Control)	% Change
Ligament Mass (mg)	132.2	89.7	44
Ligament Thickness (mm)	1.01	0.79	27
Ligament Mass Length (mg/mm)	6.45	4.39	47
Junction Strength (N)	119.1	93.5	28

**Figure 5:** Prolotherapy causes a statistically significant increase in ligament mass and strength as well as bone-ligament junction strength.

Prolotherapy Versus Cortisone		
	Prolotherapy	Cortisone
Effect on Healing	Enhanced	Inhibited
Effect on Repair	Enhanced	Inhibited
Effect on Collagen Growth	Enhanced	Inhibited
Effect on Tendon Strength	Enhanced	Inhibited
Effect on Ligament Strength	Enhanced	Inhibited
Effect on Cartilage Growth	Enhanced	Inhibited

**Figure 6:** Prolotherapy is needed to heal an injury.

## Prolo Your Pain Away!

Since pain is caused by injured or weakened connective tissue, i.e. ligaments or tendons, Prolotherapy can cure or substantially alleviate **most** painful conditions because it strengthens the injured areas.

These are some of the painful conditions that have been treated successfully by Prolotherapy:

Arthritis	Meniscal Tear	Rotator Cuff Pain
Back Pain	Migraines	Sacroiliac Laxity
Bone Spurs	Myofascial Pain Syndrome	Sciatica
Bunions	Neck Pain	Scoliosis
Carpel Tunnel Syndrome	Osteoporosis	Slipping Rib
Fibromyalgia	Plantar Fasciitis	Spondylolisthesis
Herniated Discs	Post Surgery Pain	Sports Injuries
Ligament Sprains	Pregnancy Back Pain	Subluxation
Loose Joints	RSD Pain	Tendonitis
		Tennis Elbow
		TMJ Syndrome

....and a host of others

## Prolo Your Arthritis Pain Away!

Soft tissue injuries to the joints often start the development of degenerative joint conditions. Injury to the ligaments and stabilizing structures of the joint is often the original site of injury. When the ligaments are stretched and weakened, the other structures in the joint, like the meniscus, sustain added pressure. Eventually these structures become fatigued and the cartilage begins to deteriorate. Prolotherapy can stop the degenerative process and eliminate the pain. (See Figure 7.) Because Prolotherapy gets at the root cause of the arthritic process it has been used successfully to treat a myriad of common degenerative conditions. (See Figure 8.)

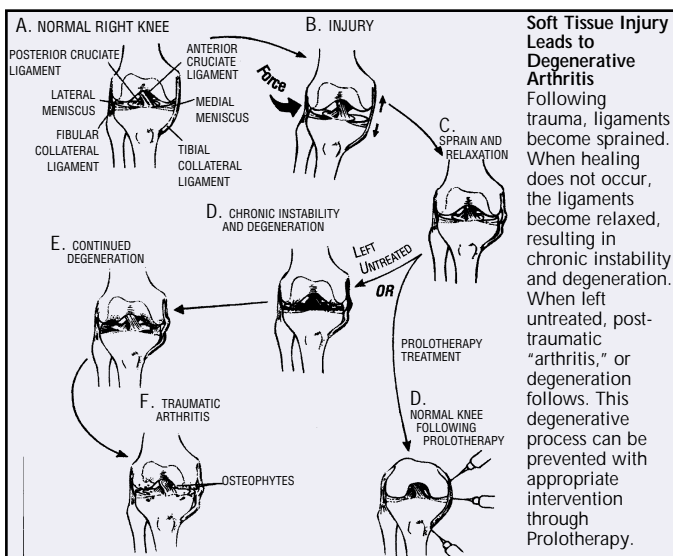


Figure 7: Soft tissue injury leads to degenerative arthritis, where Prolotherapy halts the process.

## Common Degenerative Conditions Treated Successfully with Prolotherapy

Area	Condition
Knee	Osteoarthritis, Chondromalacia Patellae
Hip	Osteoarthritis, Hip Ligament Sprain
Lower Back	Degenerated Disc, Herniated Disc
Neck	Degenerated Disc, Herniated Disc
Shoulder	Osteoarthritis, Rotator Cuff Tendonitis
Ankle/Foot	Ankle Ligament Sprains, Plantar Fasciitis
Hands/Fingers	Osteoarthritis, Ligament Sprains

**Figure 8:** Regeneration occurs in all joints of the body.

## Connective Tissue Healing Involves Many Factors

Prolotherapy stimulates the body to repair painful areas. It **starts** the normal inflammatory healing reaction, but the body's immune system must respond and grow the collagen that is necessary to repair the injured ligaments, tendons, or cartilage. If a person has lost the ability to heal, the response to Prolotherapy will not be optimal. This person is said to have *connective tissue deficiency*, defined as a disorder characterized by a weakening of the connective tissues and a deficiency in the amount, strength, or functioning of the connective tissues leading to a myriad of painful and chronic symptoms. Since there are many factors that affect connective tissue healing, the condition may have many causes. (See *Figure 9*.)

## Factors Affecting Healing of Connective Tissues

Age	Overall health status
Blood Supply	pH and lactate concentration
Degree of hypoxia (systemic and local)	Pharmacological agents (drugs)
Dietary intake	Psychological influences (placebo effects and psychoneuroimmunological links)
Electrical fields	Severity of injury
Gender	Structural (physical) deformities
Growth factors, cytokines, eicosanoids	Temperature
Hormonal influences	Timing and return to physical activity
Mechanical load forces	Type of injury
Metabolic and cell turnover rates of connective tissue	Type of onset (acute or chronic)
Mobility (local & whole body)	Type of tissue(s) affected
Muscular strength and forces	Underlying disease processes
Nutritional status	

**Figure 9:** Connective tissue deficiency has many causes.



The cause of the connective tissue deficiency is very often due to the actual traditional **treatment** the person received, including NSAIDs and cortisone shots. Other common causes include nutritional factors and hormone deficiencies. Women are much more likely than men to suffer from the effects of connective tissue deficiency, and thus chronic pain, because of their high estrogen levels, which inhibit collagen synthesis. (*See figure 10.*) When tested at Caring Medical in Oak Park, Illinois, most people with chronic pain are found to have low levels of hormones, such as Growth Hormone, testosterone, DHEA, and progesterone, all of which are necessary for connective tissue health and healing. For the person with a suspected systemic connective tissue deficiency problem, we recommend a formal evaluation by a doctor who not only does Prolotherapy, but natural medicine as well.

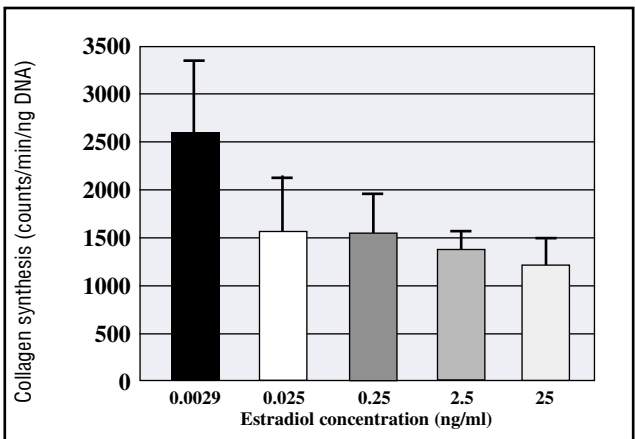


Figure 10: Collagen synthesis is inhibited by increased estradiol levels.



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about your  
health?*

*So are we.*

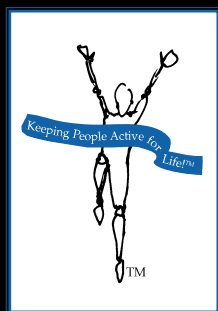
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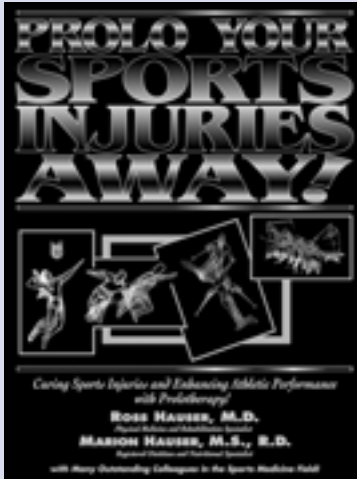
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