



# North Texas Musculoskeletal Medicine

*Enhancing the body's innate ability to heal*

*Ntxmsk.com 817.416.0970*

## Regenerative Orthopedics

### **Dennis E. Minotti II, D.O.**

Thank you for your interest in Regenerative Orthopedics, procedures that are radically changing treatment of musculoskeletal conditions. Stem Cell Therapy and Platelet Rich Plasma Injections (PRP) are non-surgical procedures designed to accelerate regeneration of cells in healing of acute and chronic musculoskeletal injuries and arthritis.

Included in this packet is additional information on questions you may have on these procedures.

If you would like to submit information on your individual condition, please select the "Am I a Candidate" option on our website homepage. Your condition will be evaluated for likely success with our regenerative procedures, and someone will respond to you shortly.

Please call our office at 817.416.0970 to make an appointment for a consultation or further information.



## About Dr. Minotti

I am Dr. Minotti, a regenerative medicine specialist. I have spent the past 16 years of my life exploring new and better ways to treat the human body. I help frustrated patients who are ready to find freedom from pain and restore their quality of life so they can do the things they love.

Until recently, traditional orthopedic treatment for chronic pain and degeneration included cortisone injections and pain medications which both often have negative side effects. The other option was surgery that involves lengthy rehab and often doesn't work.

Fortunately, 86% of injuries can be treated non-surgically.

Research exploring ways in which the body actually heals has allowed for innovative advancements in regenerative orthopedics. Regenerative medicine helps bodies mend themselves, providing cures for people who have been living — until now — without treatment options.

Stem Cell Therapy and PRP are non-surgical procedures designed to accelerate regeneration of cells in healing of acute and chronic musculoskeletal injuries. They address the root cause of your pain rather than merely treating the symptoms.

Using advanced ultrasound guided procedures, stem cells and/or platelets are injected into damaged tissue to help the body generate new cells. Mesenchymal stem cells found in adipose tissue and bone marrow, along with potent umbilical stem cells, are the most powerful treatment available for orthopedic regeneration.

Dr. Minotti is a board certified physician specialty trained in Neuromusculoskeletal Medicine and Osteopathic Manipulative Medicine. His primary focus is Regenerative Orthopedics. He is also an adjunct professor at UNTHSC.





## Stem Cell Therapy

NTXMSK offers three types of Stem Cell Therapy for our patients to choose from according to their preference. We also offer a series of optional protocols so your treatment can be tailored to individual conditions.

### **Umbilical Stem Cell Therapy**

Mesenchymal stem cells (MSCs) from umbilical tissue are unspecialized cells that have the capacity to change into any healthy cell in our body (pluripotent). As other cells in our body, stem cells age as we do. That is why use of stem cells from umbilical cord tissue/blood, cells which are young and healthy, are a more potent source and have a higher success rate in stem cell therapy.

The umbilical cord serves as a conduit of nutrients carrying oxygenated, nutrient rich blood. This cord blood is rich in primitive stem cells, growth factors and immune cells. The stem cells are derived from umbilical tissue that would otherwise be discarded and then processed in a sterile environment.

### **Bone Marrow-derived Stem Cell Therapy**

Science has discovered that both bone marrow and adipose cells are rich in MSCs. These can be harvested from the patient's body and injected in a condensed form into an injured site.

Mesenchymal stem cells (MSCs) found in adult bone marrow are extracted from the back of the patient's pelvis or hip bone using a special needle developed for bone marrow extraction. FDA-approved devices concentrate the bone marrow into what is called "Bone Marrow Aspirate Concentrate" (BMAC). The cells are not manipulated or altered with additives. These adult stem cells are considered multipotent stem cells, so are able to differentiate into the type of cell into which they are injected.

### **Adipose-derived Stem Cell Therapy**

Mesenchymal cells from adipose (fat) tissue are most often used in regenerative orthopedics. A small amount of fat is extracted with a needle developed for fat extraction. The fat sample is spun in a centrifuge to create an end product of stem cells and growth factors called the vascular stromal fraction (VSF). The cells are not altered with additives or manipulated. Adipose-derived stem cells have been used in conjunction with PRP and/or BMAC in the treatment of musculoskeletal conditions.



## Regenerative Procedures

### **Platelet Rich Plasma Injections**

PRP condenses and re-injects the body's natural healing elements to promote and accelerates the healing process of soft tissue injuries and osteoarthritis. Plasma, the liquid portion of blood, acts primarily as a transport medium for blood cells, nutrients, and metabolic waste products, which contributes to the physiological stability of the body. **Platelets** are among the many blood cells in plasma that not only play an important role in forming blood clots but also contain growth factors, such as alpha-granules, that are central to the body's healing process.

Treatments are generally spaced at least 6-8 weeks apart, allowing for proper healing cascade to take effect. Average treatments are 2-3; however, some patients require more treatments depending on their individual concerns. Typically, more severe, chronic issues will require a greater number of treatments. Some personal factors that may inhibit maximum healing include smoking, poor nutrition, diabetes and other immune suppressing conditions.

### **Dextrose Prolotherapy**

"Prolotherapy" is derived from the Latin word "prolo" meaning offspring, due to the proliferation of cells caused by the procedure. The dextrose acts as an irritant, causing the body to regenerate tissue at an accelerated rate. The stimulation promotes healing by providing fresh and adequate blood supply to the injured area through the body's healing response of inflammation.

Treatments are generally spaced 4-6 weeks apart, allowing for proper healing cascade to take effect. Average treatments are 3-5; however, some patients require more treatments depending on their individual concerns. Typically, more severe, chronic issues will require a greater number of treatments. Some personal factors that may inhibit maximum healing include smoking, poor nutrition, diabetes and other immune suppressing conditions.

### **Amniotic Membrane Injections**

AmnioFix is an all-natural injection solution derived from amniotic tissue designed for repair and regeneration of soft-tissue of the joints. Soft tissue injuries are often caused by either a trauma or overuse of the affected area. Amniotic Membrane Injections provide a non-surgical option for damage caused by trauma or chronic conditions brought about by repeated motion in active individuals and athletes. Conditions effectively treated include tendinopathies, tendinitis, tendinosis, tendon and ligament sprains, and partial tears.

AmnioFix contains naturally occurring agents that reduce inflammation, scar tissue formation, and enhance healing of micro-tears in soft tissue.



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## Regenerative Orthopedics      Osteopathic Manipulation

### Common Conditions Treated

Regenerative Orthopedic procedures are designed to stimulate the body to regenerate cells in areas of degeneration at an accelerated rate. Procedures include Stem Cell Therapy, Platelet Rich Plasma Injections (PRP), Prolotherapy, and Amniotic Membrane Injections. These injections are a safe, non-surgical option for chronic injuries, pain and arthritis.

Pain from sport and accident injury, overuse and the aging process is often caused by damage to the joints and connective tissue. If the structures do not heal properly, chronic degeneration and arthritis result. Regenerative Orthopedic procedures accelerate and enhance the natural healing process.

<b>Cervical Spine</b> arthritis, instability, whiplash, disc disease <b>Thoracic Spine</b> arthritis, instability, rib dysfunction	<b>Elbow</b> instability, arthritis, Tennis Elbow (lateral epicondylitis), Golfer's Elbow (medial epicondylitis), triceps tendonitis/tears	<b>Knee</b> arthritis, ligament instability/tears, Runner's knee (tendonitis), Osgood-Schlatter's Disease, pes anserine tendonitis
<b>Lumbar Spine</b> arthritis, instability, disc disease, spondylosis, pain after surgery <b>Pubic Symphysis</b> osteitis pubis, instability, sports hernia	<b>Wrist and Hand</b> thumb arthritis and instability, carpal bone instability, carpal tunnel syndrome, TFCC tears, finger arthritis	<b>Ankle and Foot</b> Arthritis, instability/chronic sprains, sinus tarsi syndrome, Achilles tendonitis/tears, plantar fasciitis
<b>Shoulder</b> instability, recurrent subluxation, impingement syndrome, RTC tendonitis/tearing, arthritis of GH joint or AC joint, SLAP injuries (labral tears)	<b>Hip and Pelvis</b> Instability, arthritis, pelvis tendonitis and pain, hip stabilizing muscles/tendons, chronic IT band tendonitis, chronic hamstring strains/tears	<b>TMJ</b>

Musculoskeletal injuries normally take 6-8 weeks for the repair process to occur. Anti-inflammatory and pain medications or steroid injections actually inhibit this process. Surgery should be the last option for chronic pain and arthritic conditions. Regenerative Orthopedic treatments can produce long-lasting results as they treat the cause of the pain rather than merely treating the symptoms.



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### Regenerative Information and Pricing

**Prolotherapy**

Usually requires 2-8 sets of injections once every 2-3 weeks.

**Platelet Rich Plasma (PRP)**

Usually requires 2-4 sets of injections once every 4-6 weeks.

**Stem Cell Therapy (Umbilical, Bone Marrow, and Adipose)**

Can be repeated every 6 months if needed and PRP for boosters in between if needed.

**ALL REGENERATIVE TREATMENTS ARE FULL PRICE FOR FIRST REGION AND HALF OFF SECOND REGION. \*\*WITH THE EXCEPTION OF LOWER BACK, MID BACK AND NECK REGIONS\*\***

	Prolotherapy	PRP	Amniotic	All Stem Cell
Lower Back	300	600	800	3800
Neck	300	600	800	3800
Mid Back	300	600	800	3800
Knee	200	500	700	3200
Shoulder	200	500	700	3200
Ankle/Foot	200	500	700	3200
Wrist	200	500	700	3200
Fingers	200	500	700	3200
Toes	200	500	700	3200
Elbow	200	500	700	3200
TMJ	200	500	700	3200
Hip	200	500	700	3200
ED (P-Shot)		1900		

\*\*\*\*Recommended ESW treatment for ED – ESW 2x/week for 3 weeks. Total of \$600. For ED, the patient may use just ESW, just PRP, or BOTH. If the patient wants to do the ESW treatment & PRP, the PRP is performed at the last ESW appointment. The cost for the ESW/PRP treatment is \$2500. If patient pays in full for treatment up front, they will receive a \$200 discount.



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### Stages of Musculoskeletal Repair

<b>Post injury First 72 hours</b>	<b>Inflammatory 1<sup>st</sup> week</b>	<b>Proliferation 3-6 weeks</b>	<b>Maturation Week 6-18 months</b>
<p>The body's first response is to protect itself. Blood containing platelet cells rushes to the area to stop bleeding and initiate the healing process.</p> <p>Platelets are the most numerous cells shortly after a wound occurs, releasing cytokines, small proteins important in cell signaling, and growth factors. Growth factors stimulate cells to speed their rate of division.</p> <p>Platelets, also, release other chemicals that stimulate the inflammatory phase.</p>	<p>Inflammation is the body's natural response to defend against harmful substances. As the blood vessel become dilated, swelling quickly occurs.</p> <p>A special category of white blood cells that originate in the bone marrow rush to the area as first responders. Two types of leukocyte are predominant in the inflammatory response- macrophages and neutrophils.</p> <p>Neutrophils are first to the injured site and function by neutralizing harmful bacteria. Macrophages aid the healing process by engulfing bacteria and dead cells, ingesting them so that the area is clear for new cells to grow.</p>	<p>Swelling and pain begin to subside and proliferation of cells begins to repair the injury.</p> <p>Proliferation is when the body begins to produce new cells and tissue.</p> <p>Special cells called fibroblasts create a framework of collagen for new cells to develop, essentially sewing the two bits of damaged tissue back together. Collagen is the universal building material for most tissue in the body.</p> <p>In soft tissue, collagen is organized in straight lines, allowing the stress to dissipate evenly through the tissue when it is stretched. However, collagen formed during the Proliferation Stage is constructed in a random fashion. This happens because the body is trying to repair the area quickly. As a result, the repair site is left weak and susceptible to further injury.</p>	<p>New blood vessels mature and the tissue now becomes stronger with more organized and healthy fibers. Pain subsides. Collagen density and tissue strength are increased.</p> <p>Scar tissue, part of the proliferation phase, generally, causes adhesion formation that inhibits mechanical function.</p> <p>When healing is enhanced through cellular regenerative procedures, repair provides increased collagen deposit resulting in reduced scar tissue. Intrinsic healing through an accelerated process results in better bio-mechanics, particularly a better gliding motion in the tendon sheathe.</p>

Ligaments and tendons contain similar biological structure. Healing of these tissues is divided into four overlapping stages (Table) with the body functioning similarly to an EMR unit, each biological function doing its own job in turn. Intrinsic healing enhanced by regenerative injections allows for less secondary tissue damage and quicker, more complete healing.



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### Frequently Asked Questions

#### **What is the success rate of Regenerative Orthopedic Injections?**

Studies show that approximately 86% of the patients who responded said they were satisfied with their treatment.

#### **How many injections are required?**

Responses to treatments vary depending on age, overall health, and nature of the injury. Most PRP treatments require 2-4 sets of injections. Stem Cell Injections are more powerful and generally require fewer treatments. The correct procedure for you varies with severity of condition and other health factors.

#### **How soon can I go back to regular physical activities?**

Regenerative Injections help to repair soft tissue and accelerate healing. Any healing is not immediate. This therapy is stimulating the growth and repair of tissue which requires time and rehabilitation. Generally speaking, conservative activity is tolerated during the first six weeks. Pain during or after activity is a good indicator of what your body will allow. The length of time, however, is determined by the extent of the injury and your individual healing tendencies.

#### **Are Regenerative Procedures covered by insurance?**

No, these procedures are not covered. However, NTXMSK takes most major insurance plans, and we will submit the initial consultation to your carrier. NTXMSK charges standard office visit fees for the initial evaluation.

#### **Can Regenerative Orthopedic Procedures prevent surgery?**

Most soft tissue injuries have portions intact, making regenerative injections a preferred approach. If the tissue is completely torn, however, surgery is most likely required.

#### **Can I drive after my procedure?**

If you have taken any type of sedative, you MUST have a driver. All other procedures do not require a driver. However, we highly recommend having one. You may feel sore or have numbness after your procedure. Every patient responds differently, and it is best to take precautions to ensure your safety.

#### **Should I eat before my appointment?**

A light meal and plenty of water about 1-2 hours before the procedure and good hydration the day before is recommended. Water improves cell hydration and lessens the discomfort of the injections. Food diminishes the likelihood of dizziness. Patients report less discomfort when they drink water right up to the time of the injections.



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### Regenerative Procedure Supplements

**Certain supplements are recommended to optimize your body's healing potential. This does not mean they are required.**

Vitamin C – 2,000 to 3,000 daily

*Increases bone marrow production of stem cells. Used as an anti-oxidant and modulator of the immune system. Also, cross links collagen during healing.*

L-Glutamine – 3,000 – 5,000 mg daily

*An amino acid for tissue repair and immune function.*

Arginine - 500mg twice a day

*An amino acid that increases cell health through increasing Nitric Oxide production. It increases blood flow and oxygenation of the healing tissue.*

Protein – Intake of 0.5 grams/pound for your ideal body weight

*Needed to maintain an anabolic state during the healing phase. With injury and healing, the body has a higher need for healing amino acids and protein.*

Tumeric – 300-600 mg/day

*Acts as a natural anti-inflammatory. Upregulates bone formation and decreases bone loss.*

Vitamin D3 –5,000 IU/day

*Helps reduce the aging of stem cell and helps stem cells differentiate into other cell types.*

Resvoxitrol – 25-50mg a day

*Protects the cartilage and reduces cartilage loss.*

Glucosamine/Chondroitin – 1000mg a day

*Acts as a natural anti-inflammatory and aids in healthy cartilage.*

Fish Oil/Omega 3 healthy fat- 1,000mg daily

*Helps modulate abnormal inflammation and augment healing*

These supplements can be ordered from our website and shipped. Supplements ordered in a bundled can be purchased at a discount rate. For optimal results, begin taking 2-4 weeks prior to beginning treatment.



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## **Nutritional IV Therapy**

### **Regenerative Mitochondrial IV therapy**

This therapy is a blend of healing vitamin C, B vitamins, amino acids and antioxidants followed by glutathione. These therapies are done in conjunction with your stem cell or PRP procedure to help:

- Increase collagen
- Improve the body's healing ability
- Decrease pain and need for post-procedure medication
- Replenish your system

### **Glutathione Push**

Glutathione is a protein called a tripeptide – a molecule composed of three amino acids. It is known as the master antioxidant and has detoxifying, anti-aging and sports performance-enhancing properties. (available in three strengths)

### **Immune Boost**

Whether you are dealing with an acute infection, recovering from one or simply being preventive, this therapy is an ideal choice. With high dose Vitamin C, hydrochloric acid as well as B vitamins, Zinc and other minerals, this combination will do just as its name implies.

### **Myers Cocktail**

The popular Myers Cocktail developed over 30 years ago by the late John Myers, MD., is a specific combination of nutrients including Vitamin C, calcium, magnesium, and a complex of B vitamins. This mixture treats a wide array of symptoms while improving energy capacity and cell function. Those with jetlag or just needing a "boost" in energy can also benefit from a single treatment.

### **Sports Recovery**