



North Texas Musculoskeletal Medicine

Enhancing the body's innate ability to heal

NTXMSK.com 817.416.0970

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Thank you for your interest in Regenerative Orthopedics, non-surgical procedure options for joint pain, torn or strained ligaments and tendons, osteoarthritis and other common injuries. Bone Marrow Aspirate Concentration (BMAC) and Platelet Rich Plasma Injections (PRP) are designed to accelerate regeneration of cells to enhance healing. These procedures are radically changing the treatment of musculoskeletal conditions.

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 complete the form on the Home Page of our website, NTXMSK.com. Your condition will be evaluated for likely success with our procedures, and a Regenerative Specialist will respond to you shortly.

Please call our Regenerative Specialist 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 my adult life exploring new and better ways to treat the human body. I help frustrated patients find freedom from pain and restore their quality of life so they can enjoy the things they love.

Until recently, traditional orthopedic treatment for chronic pain and joint injury or degeneration was limited primarily to cortisone injections and pain medications, both shown to have negative side effects. The other primary option was surgery that involves lengthy rehab and often does not work.

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

Research exploring the physiology of how the body actually heals has allowed innovative advancements in treatment of musculoskeletal conditions. Regenerative Orthopedics helps bodies mend themselves, providing cures for people who have been living – until now – with few treatment options. Regenerative Orthopedics effectively bridges the gap between invasive surgery and medications that mask pain.

Bone Marrow Aspirate Concentrate (BMAC) and Platelet Rich Plasma Injections (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.

Dr. Minotti is Board Certified and specialty trained in Neuromusculoskeletal Medicine and Osteopathic Manipulative Medicine by the American Board of Neuromusculoskeletal Medicine. He holds numerous certificates from the Interventional Orthopedics Foundation and participates in the Regenexx world-wide network of select, highly skilled physicians who are specially trained in interventional procedures for orthopedic conditions.

Dr. Minotti is honored to be recognized by his peers with the Top Docs award for the fourth consecutive year. He also serves as an adjunct professor at University of North Texas Health Science Center.

Many scientists believe the concept of intrinsic healing, or the body's ability to heal itself, is a New Frontier. Medicine is changing. The wonders of the human body and its ability to heal itself are at the center of this Medical Renaissance.



Natural forces within us are the true healers of disease. -Hippocrates



Regenerative Procedures

Regenerative Orthopedics has created a renaissance in treatment of orthopedic injuries and joint pain. Regenerative Orthopedics enhances the body's natural healing powers to treat conditions that have previously been treated primarily through surgery. They work by stimulating and enhancing the body's natural repair system, signaling needed cells to the site of an injury to repair damaged tissue. The body naturally repairs and regenerates millions of cells each minute. When the body becomes overwhelmed due to chronic or severe conditions, Stem Cell Therapy and Platelet Rich Plasma Injections (PRP) can provide healing cells directly to damaged tissue to replace depleted cells, allowing for accelerated and more complete healing.

NTXMSK offers Bone Marrow Aspirate Stem Cell Therapy. We also offer a series of optional protocols to tailor your treatment to individual conditions.

Bone Marrow-derived Stem Cell Therapy

Science has discovered that bone marrow cells are rich in mesenchymal stem cells (MSCs). These can be harvested from the patient's body and injected in a condensed form back into damaged tissue.

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 able to both differentiate into the cells of their environment and are considered signaling cells. Cell signaling is the body's way of communicating in real time to coordinate our innate repair system. Through this system of cellular communication, MSCs regulate the immune response by attracting cells to areas where they are most needed.

Following each of these procedures, there is a recovery period of one to two weeks when stress to the joints must be minimized to allow the body to heal properly. The injected area may be sore for 48-72 hours while the early inflammation phase subsides. A follow-up visit will be scheduled for approximately 8 weeks. A booster injection of Platelet Rich Plasma (PRP) may be given at this time to maximize the healing process.



Regenerative Procedures

Platelet Rich Plasma Injections (PRP)

PRP is one of the first Regenerative Orthopedic procedures used in the treatment of musculoskeletal conditions. Blood contains amazing healing power with many types of cells working to maintain the health of the entire body.

Platelets are one of the first cells to rush to an injury to stop bleeding. Once thought to only function in formation of blood clots, research has since discovered that platelets also contain growth factors, such as alpha-granules, and tissue building proteins that are central to tissue repair. Platelets stimulate release of localized stem cells that stimulate a process called "signaling." Mesenchymal stem cells then direct the complex procedure of cellular healing.

The PRP procedure condenses platelets and other healing elements to create a solution rich in growth factors and signaling molecules. These natural healing elements are injected through ultrasound guidance directly into the damaged site to promote and accelerate the healing of soft tissue injuries and osteoarthritis. The proteins help to reduce inflammation and pain. Plasma contains the hormones, electrolytes and nutrients required to nourish cells and tissue during the healing process.

Treatments are generally spaced at least 8-12 weeks apart, allowing for a proper healing cascade to take effect. Average number of treatments is 1-4. However, many patients find results after only 1 treatment while others require more treatments depending on their individual condition. 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 new tissue 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 weeks apart, allowing for proper healing cascade to take effect. Average treatments are 2-12. Many patients find results after only one treatment while others require more treatments depending on their individual condition. 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.



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Common Conditions Treated

Regenerative Orthopedic procedures are designed to stimulate the body to repair tissue in areas of degeneration at an accelerated rate. Procedures include BMAC, Platelet Rich Plasma Injections (PRP), and Prolotherapy. 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.

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

Musculoskeletal injuries normally take 8-12 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 generally produce long-lasting results as they treat the cause of the pain rather than merely treating the symptoms.



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NTXMSK Regenerative Information and Pricing

A 50% deposit is required at time of scheduling. The remaining 50% is payable at the time of service.

Prolotherapy

Usually requires 2-12 sets of injections once every 3-4 weeks.

PRP (Platelet Rich Plasma)

Usually requires 1-4 sets of injections once every 8-12 weeks.

BMAC (Bone Marrow Aspirate)

Can be repeated every 12 months if needed and PRP for boosters in between if needed.

EPAT (Shockwave/Pressure Wave) for Musculoskeletal Complaints

\$125 per treatment. \$50 for second region if treated on the same day. Usually requires 3-5 treatments spaced one week apart.

ESW (Focused Shockwave) for Musculoskeletal Complaints

\$150 per treatment. \$75 for second region if treated on the same day. Usually requires 3-5 treatments spaced one week apart.

EMTT (Extracorporeal Magnetotransduction Therapy) for Musculoskeletal Complaints

\$75 per treatment. Usually, 2 treatments a week for 4 weeks (8 total treatments). A package of 8 can be purchased for \$400.

Additional Charges that may apply: Fluoroscope charge: \$250.00, Caudal Epidural charge: \$250.00

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.

PRICING

| | <u>Prolotherapy</u> | <u>PRP</u> | <u>Bone Marrow or Adipose Aspirate</u> |
|------------|---------------------|------------|--|
| Lower Back | 300 | 1450 | 5000 |
| Neck | 300 | 1250 | 4500 |
| Mid Back | 300 | 1250 | 4500 |
| Knee | 250 | 1000 | 4500 |
| Shoulder | 250 | 1000 | 4500 |
| Ankle/Foot | 200 | 1000 | 4500 |
| Wrist | 200 | 1000 | 4500 |
| Fingers | 200 | 1000 | 4500 |
| Toes | 200 | 1000 | 4500 |
| Elbow | 200 | 1000 | 4500 |
| TMJ | 200 | 1000 | 4500 |
| Hip | 250 | 1000 | 4500 |



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Stages of Musculoskeletal Repair

| Post injury First 72 hours | Inflammatory 1st week | Proliferation 3-6 weeks | Maturation Week 6-18 months |
|---|---|---|---|
| <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 vessels 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 that clean out dead tissue 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. 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. When healing is enhanced through cellular regenerative procedures, repair provides increased collagen deposit resulting in reduced scar tissue. Intrinsic healing through with an accelerated process results in better biomechanics, 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). Directed by mesenchymal stem cells, the body functions similarly to an emergency medical team (EMT) with 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 1-4 sets of injections. BMAC 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. Although they are designed to accelerate healing, any healing is not immediate. These procedures are 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 will submit the initial consultation to your carrier. NTXMSK charges standard office visit fees for the initial evaluation and any follow-up visits.

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 may be required.

Why PRP or Stem Cell Therapy instead of cortisone?

Cortisone injections (also known as corticosteroid injections) and PRP injections are both very effective at reducing joint pain, but for very different reasons. They are essentially opposite ends of the pain-relief spectrum. Corticosteroid injections stop the inflammatory process. The problem is that if you have a small tear in the tissue that needs to heal, you have essentially stopped the healing process. In addition, the corticosteroids are well known for breaking up collagen bonds. Tendons are a large cable made of collagen. Corticosteroid injections can weaken the tendon and make it more likely to rupture or completely tear.

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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Suggested Supplements to Enhance Healing

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

Regenexx Advanced Stem Cell Formula:

- Vitamins C and D: reduces aging of stem cells, aids in stem cell differentiation, makes stems cells healthier, increases stem cell proliferation
- Glucosamine and Chondroitin: protects cartilage and reduces cartilage loss, increases joint lubrication
- Curcumin: upregulates bone formation, suppresses oxidative stress, improves stem cell growth and proliferation, aids brain health, reduces pain from inflammation
- L-Carnosine: helps grow and rebuild soft tissue, fights aging process
- Veri-te (Resveratrol): protects cartilage, aids stem cell proliferation and differentiation, controls blood sugar, fights aging process, promotes soft tissue elasticity
- Bitter Melon: reduces sugar absorption, improves circulation
- BioPerine: increases nutrient absorption, aids in absorption of Curcumin
- Turmeric Curcumin

Turmeric and Curcumin: Curcumin blocks the inflammatory cytokines that are involved in joint destruction. It has also been shown to block the toxins than destroy arthritic joints so cells can move back to their normal state of pro-repair. Curcumin also promotes mesenchymal stem cells to produce more cartilage. Curcumin upregulates bone formation and decreases bone loss.

Glucosamine and Chondroitin: protects cartilage and reduces cartilage loss, increases joint lubrication

Fish Oil: Fish Oil is valuable as it is an excellent source of Omega-3s which your body does not produce. Along with the many cardiovascular benefits of Omega-3s, it also helps to improve flexibility of the arteries to reverse hardening. For musculoskeletal health, Fish Oil is an anti-inflammatory containing EPA. It also promotes healing. Although fish oil can be found about anywhere, many do not contain high quality ingredients. To be effective, a concentration of at least an EPA of 650 mg and a DHA of 450 mg.

These and other supplements can be found at our Supplement Store that can be accessed through link on navigation bar on our website, NTXMSK.com. For optimal results, begin taking 2-4 weeks prior to beginning your treatment.