



PRP and Stem Cell Therapies

This position statement was developed by the physicians of the Bone and Joint Institute of Tennessee after collectively reviewing the most up-to-date scientific studies of biologic therapies. There is an increasing interest in the use of biologic products, including stem cell and PRP therapies, as modalities for treatment of the musculoskeletal system. As orthopaedic physicians, we must critically analyze the scientific basis for these therapeutic options, including the benefits, risks, efficacy, and the regulatory pathways for approval. **Currently many emerging biologic therapies lack a clear demonstration of safety and effectiveness for traditional orthopaedic treatments.**

Platelet Rich Plasma (PRP) Injections

What is PRP?

- PRP stands for platelet rich plasma and represents an increased concentration of platelets and growth factors. These growth factors and platelets are naturally found in our blood. To prepare PRP, we utilize a centrifuge to separate and concentrate these factors.

How does PRP work?

- PRP restarts the healing process. When a patient has persistent symptoms from conditions such as tendinitis or plantar fasciitis, symptoms are thought to be due to impaired healing. PRP places an increased concentration of growth factors at the site of injury to restart the healing process so it will hopefully heal properly.

Where do we use PRP?

- PRP is used for numerous conditions; it has been best studied in knee arthritis, tennis elbow and plantar fasciitis. Other common conditions include tendinitis (such as Achilles, patellar, hamstring, etc.), arthritis in other joints, ligament injuries, bursitis and partial tendon tears.

What are the risks of PRP injections?

- The primary risks of PRP injections are similar to any injection, and include damage to nerves and vessels, infection and bleeding. These risks are minimal. Since we are using your own blood, you are unlikely to react to the PRP being injected.

How do you prepare for a PRP injection?

- When preparing for a PRP injection, **STOP** drugs that affect your platelets for the **7 days** prior to your injection. Classically, these drugs are non-steroidal anti-inflammatories (NSAIDs) and include drugs such as ibuprofen, aspirin, naproxen, meloxicam, Celebrex, etc.
- At your PRP appointment we will draw your blood, so make sure you keep yourself well-hydrated in the 24 hours prior to the injection.

How do we do a PRP injection?

- On the day of your injection, we will verify that you remain a good candidate for this type of injection. We will make sure you have stopped NSAIDs. Next, we will draw your blood, drawing off 15 milliliters of blood. The blood gets spun down to create a layer of platelets, growth factors and a few white blood cells. This is the PRP. The area to be injected is sterilized and injected with the PRP. Many times ultrasound is used to ensure proper placement of the PRP.
- The entire procedure from drawing your blood, spinning the blood and injecting the PRP takes approximately 20 minutes to complete.

What do you do after the PRP injection?

- After the PRP injection, you can experience increased pain and discomfort as the healing process restarts. Ice is very helpful; 20 minutes at a time to the location 4 times per day is sufficient. You can also use Tylenol for pain relief, but you will need to avoid all non-steroidals (NSAIDs such as Aleve, Advil, aspirin, etc.) for **7 DAYS** after your injection.
- Depending upon the injection location, you may require some type of immobilization such as a walking boot or wrist splint. If you have one of these, please bring it with you to the injection appointment.
- Activity levels after the injection can vary dependent upon the injection site. We use protocols from studies in the scientific literature to guide your post-injection rehab. As this process is fairly new, not every injection site or condition has a protocol developed. A general rule of thumb is as follows:
 - 1st period (weeks 0-2): rest with regular activities of daily living (go to work, store, etc.) and gentle stretching
 - 2nd period (weeks 2-6): begin gentle stretching
 - 3rd two weeks (weeks 4 to 6 after injection): begin non-impact exercises (cycling, elliptical, etc.) and continue stretching
- You will need to have a follow-up appointment in 6 weeks to check your progress and to guide the rest of your rehab.
- Most people notice significant relief beginning 4-6 weeks after a PRP injection. You can continue to have improvement of symptoms up to 3 months after the injection.

Who can't get a PRP injection?

- As we need your platelets to be as healthy as possible, you cannot get a PRP injection if you take blood thinners (such as warfarin, Xarelto, etc.) or platelet drugs such as Plavix without a physician clearance. After discussing with your prescribing physician if you are able to stop these medications for two weeks (one week before and one week after the injection), you might be a candidate for a PRP injection. Newer agents such as Xarelto only require 48 hours off the medication.

What does a PRP injection cost and does insurance cover this injection?

- Unfortunately, insurance believes PRP injections to be experimental and does not cover these injections. Our clinic charges a flat rate which includes the specialized syringe, the centrifuge to spin the blood, the blood draw itself, the procedure and the use of ultrasound. We do require payment on the day of the injection. We offer two options- Arthrex Angel (\$800) and Regenlab (\$350). The Arthrex Angel is more concentrated and may have better results, depending on the location of the injection. Your physician will determine which PRP option is best for you.

How many PRP injections will you need?

- Many centers who perform these PRP injections, say you may require multiple injections (e.g. one shot a week for 3 weeks). Scientific evidence is lacking, in general, for PRP injections and the use of multiple injections. If you do not get benefit from the first injection, we do not believe that multiple injections performed every 1 or 2 months will benefit you and will only add to your cost.
- At this point, our policy is to repeat, if needed, once every 3 months if the patient has received some benefit following the first injection. We will also repeat a PRP injection if you have reoccurrence of pain after long term relief.

Stem Cell Treatment

What are stem cells?

Stem cells can create new cells in both existing healthy tissue and help repair damaged tissue. Mesenchymal stem cells can differentiate into muscle, bone, fat and cartilage. Bone marrow-derived mesenchymal stem cells (BMD-MSC) are most commonly used in orthopaedics.

How is a stem cell treatment performed?

Stem cells are most commonly obtained from the iliac crest of the pelvis. A needle is inserted into the bone and samples of the bone marrow are aspirated. The samples are then sent to a lab for processing and amplification. This process may take several weeks. The concentrated sample is then injected into an area to facilitate healing. Stem cells can also be harvested from adipose (fat) tissue, synovial tissue, peripheral blood, and placental tissue. Allograft (donated) stem cells are also now commercially available.

How effective is stem cell treatment for orthopaedic conditions?

Cell and tissue therapies promoted for orthopedic conditions have been poorly studied and lightly regulated, with small numbers and many studies lacking a control group. There may be promise in the future for biological therapies; however, we currently do not have evidence to tell patients they can expect good outcomes and avoid surgery. Stem cell treatments are being developed for bone fractures and non-unions, regeneration of articular cartilage in arthritic joints, and for the healing of ligaments or tendons. Stem cell treatment shows the most promise and scientific evidence for focal cartilage defects in joints, such as the knee. Conditions with possible but unproven benefit include osteoarthritis of the knee, hip, shoulder, and ankle.

What are the risks of stem cell treatment?

As stem cells regenerate themselves, they can become different cells which may form tumors or cancer cells. While most studies have shown stem cell treatments to be safe, transplanting cells into a different body part from which they originated may have unforeseen risk and unpredictable complications.

- Any cell grown or processed in the laboratory might have genetic damage.
- High cost may not be supported by clinical improvement.
- The FDA currently discourages the use of stem cells except in clinical trials or approved therapies.

Additional Questions?

- Please feel free to call the office (615-791-2630) if you have any additional questions.