OAK Orthopedics Newsletter

SPRING 2018

OAK Sports Medicine

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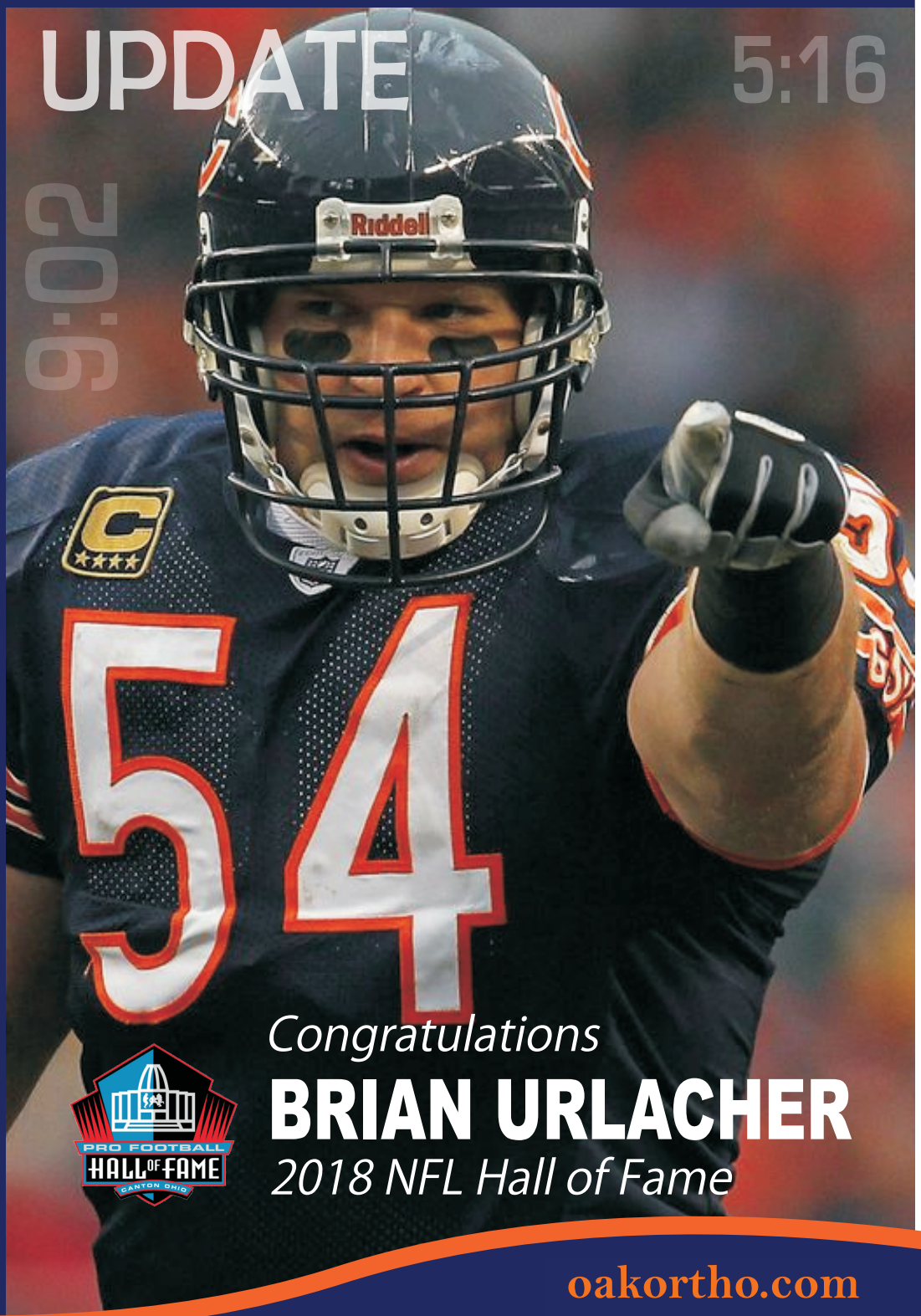
OAK ORTHOPEDICS

SPECIALIZING IN WHAT MOVES YOU



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OAK ORTHOPEDICS
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BRADLEY
400 S. Kennedy Dr., Suite 100, Bradley, IL 60915
Phone (815) 928-8050

FRANKFORT
19552 S. Harlem Ave. , Frankfort, IL 60423
Phone (815) 469-3452

WATSEKA
200 Fairman, Watseka, IL 60970
Phone (815) 432-7722

EDITOR
Carey E. Ellis, M.D.

PUBLICATIONS COMMITTEE
Carey E. Ellis, M.D.
Mark N. Sutton MA, ATC/R, CAA

CONTRIBUTORS
Alexander Michalow, M.D.
Kermit Muhammad, M.D.
Eric L. Lee, M.D.
Jeff Weber, MS, CSCS
Mary Kohl RN, BSN
Executive Director
Oak Surgical Institute (OSI)
Cathy Ringer, MHS, OTR/L, CHT
ATI Physical Therapy

Mark N. Sutton MA, ATC/R, CAA

PRINTING
Printwerk Graphics & Design

OAK Sports Medicine Update is a publication of OAK Orthopedics. This newsletter is intended for those healthcare professionals, coaches, and athletic directors who are interested in the diagnosis, prevention, treatment and rehabilitation of sports injuries.

cover photo courtesy of: cagesideseats.com

Saturday Sports Injury Clinics

OAK ORTHOPEDICS will once again offer its Saturday morning Sports Clinic to area athletes. The Bradley and Frankfort offices will be staffed by an orthopedic physician, medical assistant an x-ray technician. We will be able to do x-rays, braces, MRI, physical therapy and other tests that may be rendered by the physician.

The sports clinic is offered to all athletes, all ages. It begins at 9:00 a.m. on Saturday mornings. The clinic in Bradley will run year round and the clinic in Frankfort will run through the fall sports season.

The clinic will be held at the Bradley and Frankfort offices listed below.

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Frankfort, IL 60423 **Phone (815) 469-3452**

Technology and Orthopedic Surgery

By: Kermit Muhammad, M.D.
OAK Orthopedics


Kermit Muhammad, M.D.

Very often in the news we hear about a high profile athlete with a devastating injury that is fixed. There is then a miraculous recovery and the player comes back to play at a high level. Tommy John (baseball) , Adrian Peterson (football), Juan Martin Del Potro (tennis) are just some names that come to mind when I think of miraculous come backs. Of course there is a long list of players, many without fame and fortune who find themselves able to return. In fact, it's probably seen as more of the rule than the exception that a player make it back to their previous level.

The question must be raised, why is this the case. We tend to expect players to come back from just about anything. In years past this was not the case. A good example of this would be ACL repairs in the knee. These injuries used to be fraught with post-operative complications which are not the norm any more. Career ending injuries have been transformed and some eliminated with the improvement in technology as it is applied to orthopedic surgery. Advances in orthopedic implants, biomaterials and new developments in stem cell therapy have changed the game…. literally.

Improvements in the technology and a better understanding of the biology of tendon and ligament healing allow for better repairs and earlier rehab. Rehab techniques have improved across the board but the ability to perform early rehab is dependent on stable repairs. Ultimately a stable repair with a minimal amount of surgery leads to a faster more aggressive rehab which leads to a better clinical result. This is the essential difference from years past to current approaches. Stable repairs with early motion is the current mantra of orthopedic surgeons.

The tools of the orthopedic surgeon have evolved. When ligaments tear there are special anchors to reattach them to bone. Some are absorbable so they do not leave a lasting mark on the biology. There are suture materials that have been developed that have fiber strength stronger than even the surgical steel that was used in times past. In areas of tendon or ligament weakness there are biological wraps that improve the healing process. Fracture fixation is improved with low profile contoured plates which better reconstruct the normal anatomy. And finally there are new biological tools that aid the body in the healing and reconstruction process itself.

In terms of cutting edge techniques, one of the newer things is applying biologics to injuries to allow the body to heal faster on its own. One example of this is stem cell therapies which use the patient's own stem cells harvested from bone marrow or fat and inject these cells into sites of injury to allow tissues to regenerate. Regenerative medicine is an entirely new area of orthopedic surgery. There have been many treatment modalities developed already. In some cases more experimental applications have to be undertaken offshore. Although these are not time tested and proven they do represent the future of healing and injury repair.

Another technological advance that has helped orthopedic surgeons is the advance in digital imaging and intraoperative x-ray with smaller safer machines. The combination of improved imaging in surgery along with arthroscopic techniques have been at the foundation of minimally invasive techniques. In spine surgery there have been advances in imaging which allow for intraoperative CT scans which allow much more precise instrumentation of the spine. Along these lines the development of 3D modeling and printing allow for custom tools and implants to correct deformity of the extremities.

The combination of implants and imaging and biological advances has raised expectations of players and the orthopedic surgeons that treat them. Now, when you see a skier take a horrible tumble down the mountain , or you see a football players leg bend in an awkward position; the question is how long will it take them to come back, not will they come back. This change in viewpoint has been caused by the technology that is applied to the problem and it will continue to improve.

Quality Care

By: Eric L. Lee, M.D.
OAK Orthopedics


Eric Lee, M.D.

I recently was reading an article detailing the "epidemic" of physician burnout. The authors listed a number of reasons for this apparent epidemic, not the least of which was what many call the "growing alphabet soup" of healthcare. As many of you probably know, in 2015 the government passed new legislation, MACRA, which required changes in how physicians were to be reimbursed. So a new system, the Quality Payment Program, or QPP, was proposed to implement those changes. The goal of the QPP was to "provide financial rewards for eligible clinicians who provide high-quality care with efficient resource utilization and engagement in quality improvement activities." [1] Furthermore, the QPP provided two different reimbursement programs, MIPS or APMs, to achieve this. MIPS and APMs were intended to create a quality reporting system that was more flexible than prior programs, including PQRS,

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Quality Care cont.

VBM, and MU, "while at the same time reducing the complexity and burden of reporting requirements on clinicians."[1] As is so often with government programs, intentions were not borne out in reality. Luckily though, we have the AMA, or the ABMS, or countless other alphabet organizations to "help" us with all of this. Add in the tens of thousands of new codes that the CMS and WHO have added in the latest ICD-10 diagnostic code manual, and there now is a numerical soup to go along with the alphabet soup.

Despite this alphabet soup of burdens and complexity, at first glance the new system seems reasonable - reward physicians who perform high quality, efficient care, without wasting money on needless testing, while continuing to increase their knowledge using quality improvement activities. When one looks closely at the above goal/definition, one will see that quality driven care is a major component to these new changes. The question, though, is who determines quality? The push to define quality by checking boxes on an electronic medical record regarding issues that may or may not have anything to do with a current patient visit isn't the answer. After all, if someone is sitting in my office with a painfully broken arm, the question of whether or not they received a flu shot several months ago is not at the top of their priority list. But it does add time and burden of documentation to that visit, and someone somewhere (likely not actually practicing medicine) has determined that if we check the box that we asked that question, it has been a higher quality visit and thus worth better reimbursement in the long run.

Does one define quality by outcomes? Certainly this makes some sense as solid, quality care should yield better outcomes for patients than shoddier care. But what if a physician perfectly follows evidence-based medicine spends time educating the patient on the proper work up and treatment for a particular illness, yet the patient is non-compliant and therefore has a poorer outcome? Has that physician preformed more poorly than a colleague who has a more compliant patient, but who may not even have spent as much time educating his/her patient? This seems a bit unfair, and it is certainly unfair to lower their overall reimbursement based on whether patients follow their recommendations, especially if those recommendations are based on sound evidence-based principles. I believe in the altruism of the vast majority of my colleagues in the medical profession, but to be punished financially, relative to their peers, for taking on challenging situations isn't the answer, and is probably more than a little demoralizing.

Should quality be purely defined by the patient? After all, patients are seeking a service, in this case healthcare, and may be in the best position to know if they were treated well or not. However, there are pitfalls with this as well. For instance, many patients, for a variety of reasons, expect to receive antibiotics for ear pain, or a sore throat, or sinus pain/pressure. However, excellent medical care would dictate in many cases that antibiotics will not help these conditions, may even make things worse, and in fact should not be given. However, if that patient believes they should have received antibiotics, they may perceive that they received less quality care.

Does the physician decide if he/she is providing quality care? Certainly all physicians should be making efforts to stay abreast of the latest treatments, using best evidence guidelines in their treatment plans, and employing solid clinical decision making without over-utilizing expensive diagnostic tests. I think most physicians would admit, however, that allowing themselves to determine if they are providing true quality care is not a good entirely objective measure either.

All of this led me to reflect upon why I entered medicine in the first place, and what I thought constituted quality care when I started my training but was yet to enter the profession. Needless to say, at that time, my thoughts on quality care had nothing to do with the alphabet soup that we currently find ourselves having to consume. It certainly did not involve checking boxes on an EMR to satisfy some bureaucrat's ideas on what constitutes quality. My thoughts centered on being a well educated and informed physician, willing to sacrifice for my patients, providing prompt, empathetic, and sound medical care. And my thoughts and beliefs haven't changed. The fact that a person who is suffering from an injury or illness will willingly come in and share that problem with a physician who is, in the majority of cases, a total stranger, and put their hope and trust in that stranger to help them is a profound privilege for those of us in the field of medicine.

This privilege means that we physicians need to be accessible and available for our patients. In return for the trust our patients have placed in us, we need to be accountable to patients and their families, to give them our best possible effort, attention, and empathy at all times. We also need to remember we are human, and despite our best efforts, there may be times when we feel as though we performed at less than our best. We need to remember that many patients have a choice who they can see, and it is a privilege that they chose us. It is even more of a privilege if they choose to come back and see us for a new problem.

This is why eleven years ago I chose to join OAK Orthopedics. I was excited to join a group of physicians who seemed to embody these ideals. It's a group that includes a sports orthopedic surgeon who, despite being a physician for an NFL team, devotes just as much time and effort to local high school athletes and weekend warriors. It includes a sports physician who reminds me that every day we should be looking for some way to become better and more knowledgeable in our fields, the better to serve our patients. It includes a double board certified surgeon who runs a free clinic, out of his own pocket, because it is the right thing to do to serve others. It's a philosophy that, as a group, we strive to adhere to despite the increasingly obscure quality measures put forth by and for "reimbursement models." It requires us to regularly look at where we can improve, and to accept honest feedback when we don't meet expectations. These are not things that are measured by the alphabet soup. Dryly documenting on an EMR checkbox certain quality parameters doesn't mean much to our patients if they have been treated poorly otherwise. Crossing our "t's" and dotting our "i's" in our reporting so that we can

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Quality Care cont.

be considered quality doctors by payers probably doesn't mean much to our patients.

I will readily admit that I don't have all the answers for so many of the problems facing our healthcare system today. But I do know that at the root of medicine, we are privileged to serve and care for patients. We are therefore grateful for referring physicians, trainers, therapists, and other medical personnel who entrust us to treat those they refer to us. We are grateful that patients choose to return to OAK for cares should a new condition arise. We have not forgotten that at the heart of our profession is service, and if we always remember who we serve and why, we will continue to provide quality care.

1. https://encompassmedical.com/alphabet-soup-acronyms/.

Medial Epicondylitis: Golfer's Elbow- What is it?

By: Cathy Ringer, MHS, OTR/L, CHT
ATI Physical Therapy

Cathy Ringer, MHS, OTR/L, CHT

Overview

Golfer's elbow, or medial epicondylitis, is a condition that causes pain at the bony bump at the inside of your elbow, and that pain can possibly extend down your forearm into your wrist. Many activities can lead to this pain, including weight training, throwing sports such as baseball and softball, racket sports, and repetitive tasks involving gripping and bending and straightening your elbow.

Diagnosis

If you experience such symptoms as pain and tenderness on the inside of your elbow radiating down your forearm that worsens with certain movements, stiffness in your elbow, a feeling of weakness with gripping tasks, and possibly numbness and tingling into your fingers due to the inflammation in your muscles, you may have medial epicondylitis.

When consulting a doctor about your pain, a thorough examination usually will take place, including palpation of the area, X-rays to rule out other possible causes of your pain, or, possibly, an MRI to confirm the injury.

Treatment

Once your medial epicondylitis is diagnosed, it is recommended that you, if possible upon medical clearance, take over-the-counter pain relievers such as ibuprofen (Advil, Motrin IB) or naproxen sodium (Aleve). It is also recommended that you apply ice to the affected area for 15-20 minutes at a time, 3-4 times a day.

It is also strongly urged that you rest the area and cease the possible pain-causing activity until the pain subsides.

Your doctor may also order physical or occupational therapy to assist in alleviating the symptoms. Your therapist will guide you through stretching exercises for your wrist, elbow, and forearm, provide massage and manual therapy techniques to alleviate pain in the effected muscles and tendon attachments, and use such modalities in the clinic as ultrasound and electrical stimulation with anti-inflammatory benefits over the affected area. This is an excellent stretch to perform. (Picture to Rt.)

Your therapist may also recommend a brace that will help alleviate your symptoms base on your needs and lifestyle. The most recommended styles include a wrist brace placing your wrist in a neutral, resting position or a strap or sleeve along your forearm that decreases the amount of force your muscles exert.

These are some examples of recommended braces, though styles may vary by manufacturer.

Prevention

As stated above in the symptom description, once you begin experiencing symptoms, it is important that you cease the aggravating activity if you can. Apply ice to the area, rest your arm, and take recommended over-the-counter medications. If the pain is hard to control, please contact your doctor to discuss the next step in your plan of care.

ATI has several locations throughout the Bradley and Bourbonnais area, including a clinic located in the same building as Orthopedic Associates of Kankakee in Suite 500. Our phone number is (815) 936-0400. We offer free screenings as well as work closely with doctors after diagnosis for a thorough treatment including modalities to decrease inflammation and pain, recommendations for lifting and carrying and using proper body mechanics to decrease pain, and exercises to help stretch and strengthen you in preparation for a wonderful summer of golf!

ATI PHYSICAL THERAPY

Biologics in Orthopedic Surgery -- General Overview - PRP and Stem Cells

By: Alexander E. Michalow, M.D.
OAK Orthopedics

Alexander E. Michalow, M.D.

The following discussion will give a general overview on Biologics that are utilized in orthopedics, focusing on PRP and autologous stem cells. The discussion will focus on some of the background science behind the use of these techniques along with some clinical results and numerous controversies.

PRP

PRP is blood plasma with concentrated platelets obtained from whole blood that has been centrifuged with a filter removing most red blood cells and other cells. With manipulation of the centrifuge and filtering technique white blood cells can also be present in either low or high concentration.

Numerous conditions have been targeted for treatment utilizing PRP technology. However there is much controversy regarding its clinical utilization. Questions arise due to numerous inconsistencies wherein many studies show no improvement yet others show some clinical benefits. Questions regarding PRP arise regarding which conditions to treat, whether to utilize the high WBC count or low WBC count, technique for obtaining PRP, sex of patient, age of patient, pH, glucose levels and others.

In order to better understand some of the controversies it would be prudent to have a better understanding of PRP itself.

The principles behind PRP relates to platelet function. It is well known that platelets play a major role in blood clotting such as that clot which forms at the site of an injury. When an injury occurs, platelets are activated to assist in the clotting cascade. Their overall function is, however, far more complex. Platelets secrete numerous growth factors (PDGF, VEGF, AGF, EGF, and more). They also produce numerous pro-inflammatory cytokines. In fact, there are over 30 known bioactive compounds that platelets generate.

Wound healing is divided in 3 stages, inflammation, proliferation, maturation/remodeling. The inflammatory phase peaks at 2-3 days and generally subsides by 5 days post injury. Platelets are instrumental in the initial inflammatory stage as noted by their secretion of numerous pro-inflammatory compounds. Platelets also secrete numerous growth factors and likely these play a role in the secondary proliferation phase. Due to the fact that platelets are involved in the healing phase it had been theorized that an increase in concentration of platelets should benefit the healing process due to the fact that such healing factors are in an increased concentration.

As stated above, an issue regarding PRP therapy is the inconsistency in clinical studies regarding response to treatment. Such wide variability and results can be attributed to several poorly controlled factors.

1- Individual variability

There is a varying number of platelets throughout the day in every individual. This may relate to time from eating, hydration status, stress and/or other factors. In this respect, the concentration of platelets even from one individual can vary from one injection to another injection. If, for example, blood was drawn from an individual at a time where the platelet count was relatively low and the results showed negative response it may simply be due to the low platelet count rather than overall lack of potential efficacy.

2- Centrifuge and technique

There are numerous devices and techniques that are available to obtain PRP for clinical injection. It has been shown that there is significant variability in the concentration of platelets between different devices. In fact, some the devices had been shown to minimally concentrate platelets. Furthermore centrifuging techniques that are utilized vary, which can alter the concentration of WBCs from one device to the next, which can also altered clinical response.

3- Sex

It has been noted there are differences in response to PRP for different maladies between the sex's. Studies which include both sexes made thus can inadvertently generate inconsistent results.

4- Platelet concentration

In order for PRP to be effective it has been suggested that the concentration needs to be 3 times blood levels at a minimum and optimally 5 times or more. As discussed above, variability between individuals and centrifuge devices and techniques is significant. Because platelet levels are not routinely checked when the PRP is obtained there is no way of knowing whether a patient is actually obtaining a sufficient PRP concentration for any specific injection.

5- Age

Age is considered to be a significant factor with respect to PRP effectiveness. However, most studies are not controlled for age. The consideration of age is actually more complex. First, it must be noted that PRP consists of both the platelets and compounds in the plasma. It is known that the overall plasma milieu in aged individuals varies compared to young individuals. The following animal study will be discussed in order to clarify this point. In a mouse study it was shown that the injection of plasma from young mice into aged mice resulted in the aged mice obtaining younger characteristics. On the contrary, the injection of plasma from aged mice into young mice generated early aging in the young mice. This indicates that there are plasma compounds which are suggested to maintain and or induce the aging process. Furthermore this strongly suggests that it is not only the platelets, but also the plasma, that is responsible for clinical results with PRP. It would be of benefit if one could identify such compounds responsible for positive and negative effects on aging. However, there are dozens if not hundreds of compounds within the plasma. Identifying those responsible for the results of the aforementioned mice would be a daunting task. In summary, variable response to treatment with PRP can at least partly be attributed to studies that are not controlled for age.

Furthermore, with respect to PRP in the elderly, as discussed above, it was shown that plasma may have age-promoting factors. If this is true, then the use of PRP in the elderly could theoretically worsen the intended disorder that is being

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Biologics in Orthopedic Surgery cont.

treated.

6- Presence of WBCs

PRP, although it was initially intended to concentrate only platelets, can also result in the presence of either low or high concentration of WBCs. WBCs are more highly pro-inflammatory than are platelets. It has been found that some conditions respond better to low WBC PRP whereas others respond better to high WBC PRP. Furthermore some conditions can be worsened with high WBC PRP. For example, chronic tendinopathy responds better to high WBC PRP including patellar tendinopathy. Condition such as OA of the knee respond better to low WBC PRP, likely due to the fact that the high WBCs induce more inflammation. Furthermore the effect of PRP is even more complex. One investigator noted that low WBC PRP injections in postoperative rotator cuff repair patients resulted in substantial decrease in pain. However overall healing of rotator cuff repairs was not improved.

7- Timing and a number of injections

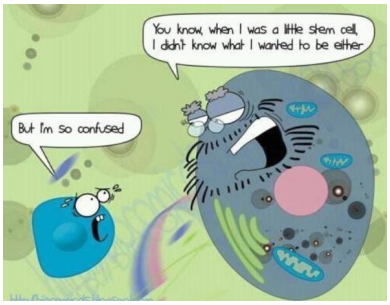
Although one or 2 injections may benefit some patients for certain conditions, it has been shown that there is likely a limit. With numerous or multiple injections of PRP at some point there could be eventual worsening of symptoms. At this point it is unknown what that limit is and if it varies from one condition to the next.

Summary on PRP

The data on the clinical use of PRP is inconclusive. This is due to the many variables that have not been controlled in clinical studies. In many situations PRP has been found to reduce and improve pain and clinical symptoms. However it has not been shown to slow down the degenerative processes in OA of the knee, nor enhance the healing process in rotator cuff repairs. The long-term results for tendinopathy at this point are not conclusive as to whether the tendinopathy heels and goes away or will recur. Finally as discussed above, one may anticipate better results in a younger individual, as compared to the elderly individual due to potential plasma related age compounds that are unknown.

As discussed above, there is variability in PRP preparations regarding platelet concentration, presence of RBCs, WBCs, pH, glucose levels, additives and others. For the future, it is needed to define a technique in order to obtain more consistent results on PRP concentrations. Furthermore, it would be prudent to have a better understanding on timing of platelet aspiration, high WBC and low WBC PRP indications, age related issues, sex-related issues, and the timing and number of injections.

STEM CELLS



Stem cells, as for PRP, have been gaining increasing interest in clinical use. Similar to PRP there are numerous controversies and unknowns. In order to have a better understanding of stem cells would be wise to have a better understanding of what stem cells are and how they function.

A stem cell (SC) is an undifferentiated cell which is capable of proliferation (i.e., Undergo multiple cell divisions) with the ultimate ability to trans-form into any cell and/or tissue type. There are 3 general stem cell types.: 1- fetal/ embryonic stem cells. These are omni-potent and/or toti-potent with the ability to transfer into any tissue or blood type and the body. 2- gonadotrophic stem cells, which pertained to the sex cells and will not be discussed further. 3-adult stem cells which include hematopoietic SCs, which form circling blood cells and mesenchymal stem cells(MSCs), which differentiate into any 1 of 4 tissue types (limited cell / tissue type = multi-potent) : bone, cartilage, adipose and muscle tissue. It should be noted that the MSC's are the types of cells which pertain to orthopedics and will be the only SCs discussed.

STEM cells are found in the circulating peripheral blood. However, their concentration is at such low levels that the use of centrifuged peripheral blood does not result in any substantial SC concentration. MSCs are found more highly concentrated in bone marrow, whereas the highest concentration is generally found in the posterior iliac crests. In clinical use the posterior iliac crest is the most common source of MSC's. The aspiration technique utilized is critical in order to maximize MSC concentration. It is recommended to use a high negative pressure technique. Slow gradual aspiration results in a higher concentration of peripheral blood with a lower concentration of MSCs. One can see that aspiration technique can vary from patient to patient and from clinical provider to clinical provider such that the concentration of MSC's could be quite variable between patients, and even in an individual patient who was obtaining multiple injections.

In the US, only freshly aspirated MSC's are approved for clinical use. Laboratory proliferated MSC's are not approved as they are in Europe and other countries. In general, the more highly concentrated, laboratory proliferated MSC's have shown a trend for improved clinical results as compared to the purely aspirated iliac crest MSC's.

In the US, with respect to orthopedics, the only cell type that is approved for laboratory proliferation are cartilage cells (chondrocytes). In a technique called ACI (autologous chondrocyte implantation), cultured chondrocytes are used for the repair of cartilage defects, and have shown reasonable improved clinical results.

Adipose Tissue

Adipose tissue is yet an additional source of MSC's. MSC's are found lining the blood vessel walls of fat cells, and these are termed pericytes. Such pericytes, MSC's, can be obtained from virtually any adipose tissue. They have been found in the anterior fat pad of the knee joint. In this manner arthroscopic surgical procedures can obtain such adipose derived MSC's at the time of surgery. There is then the need to separate the MSC's from the fat cells and blood vessels. The fat cells that are harvested are placed through a device which separates the cells from the tissue. They can be concentrated in a centrifuge. Such MSC's could then be placed into a scaffold, wherein the entire construct is subsequently placed into a cartilage defect to enhance repair of the defect.

SC Therapy

Disorders that may be amenable to MSC therapy are numerous. In orthopedics bone, cartilage and muscle tissue disorders, as well as injuries may be targeted with SC therapy. In fact, the use of MSC's derived from the posterior iliac crest has been used for many years now for the treatment of bone non-unions and to enhance bone fusions such as an spinal

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surgery.

One of the most common procedures that has been investigated for SC therapy is OA of the knee. When SCs are used for OA therapy, some of the same issues and controversies arise as for PRP. Moreover, there is uncertainty and controversy regarding dosing , timing of injection, type of MSCs, mode and route of delivery of MSCs. There are yet further inconsistencies and variability in the concentration of MSCs that are actually obtained for iliac crest aspirates. Furthermore, there is a need for an optimum protocol for MSC therapy for knee OA. There has been a recent increased interest in the use of scaffolds that are impregnated with MSCs and utilized as a graft for the healing of certain orthopedic bone and cartilage defects.

Due to such uncertainties, the use of SC therapy is currently not an insurance approved procedure in the U.S. Such procedures are cash-based. Current clinical trials are underway in order to answer questions and uncertainties with regards to safety, feasibility and efficacy but are still at early stages.

FDA approval. The question arises as to FDA approval for the use of MSCs for the treatment of OA of the knee. For non manipulated SCs, the FDA does not approve nor deny the use of such SCs. This is because the FDA can only approve or deny drugs and medical devices – autologous SCs do not fall into either category. However, as discussed above, the manipulation of SCs, as in laboratory proliferation, is not approved for use in the U.S.

The question arises as to why laboratory proliferated SCs are not approved for use in the U.S. They are not approved due to the potential cancer risk. Cancer is derived from proliferating cells, ie., stem cells. When SCs are manipulated in the laboratory, numerous growth factors are utilized to enhance this process. Such artificial manipulation of cell division could theoretically result in a mutation in a cell. And only a single such cell could result in a cancer to develop once it is re-injected into a human host.

AGE

There is increasing evidence that aging can have a negative effect on SCs. As SCs age, their ability to proliferate deteriorates and their ability to differentiate into the various cell types is altered. In the "Stem Cell Aging Hypothesis", it is suggested that age-induced deterioration of SC function may play a key role in the pathophysiology of numerous age-related disorders. Understanding the role of SC aging is of importance, especially when such SC therapies are utilized for disorders that are common in the elderly, such as OA of the knee.

Efficacy in Knee OA

As discussed above, there are current clinical studies underway in order to determine the effectiveness of SC therapy for numerous conditions, including OA of the knee.

Cartilage is an avascular tissue. In this respect, when MSCs are injected into a knee joint, they do not penetrate into the cartilage tissue itself. The question arises as to the mechanism by which MSCs can improve OA. It has been suggested that SCs manipulate their surrounding environment, and in this way can enhance the healing response. Indeed, MSCs at the site of a wound are thought to have, as a primary function, the manipulation of the local environment, whereas the proliferation of cells and differentiation into subsequent mature tissue cells may be secondary. In OA of the knee, the matrix metalloproteinases (MMPs) are enzymes that can degrade all components of the extracellular matrix of cartilage. SC therapy may alter the MMP pathways.

There are 2 considerations in OA of the knee - whether or not the bone is exposed. When the cartilage degenerative process does extend to bone there is very little remodeling of the cartilage tissue, and any remodeling that may occur is a very slow process. When bone is exposed, a completely new cartilage can form. It is key in cartilage restoration that bone is exposed, such as in the aforementioned ACI procedure. MSC therapy with or without a scaffold has shown promise to enhance healing of such defects. In the U.S., the results have not as good as those in Europe. In fact, a study in Europe has demonstrated good potential in the full regeneration of relatively large patches of bone-exposed degenerative cartilage utilizing laboratory proliferated MSCs.

Rotator Cuff Tears

Rotator cuff tears have also been targeted with SC therapy. As for OA of the knee, studies from Europe with proliferated, more highly concentrated MSCs has shown better results and more promise for generating rotator healing in rotator cuff repair surgery.

ACL and Meniscal Repair

When an ACL reconstruction is performed, the distal femoral bone surface is penetrated in order to allow for placement of the femoral graft. This femoral opening results in bone marrow from the distal femur entering the articular space. Such bone marrow bleeding contains SCs. Moreover, when a meniscus tear is repaired the rate of healing is much improved in patients who have had a simultaneous ACL reconstruction. It is the distal femoral bone marrow SCs which are felt to be responsible for such enhanced meniscal healing. In light of this finding, when a meniscus is repaired without a concomitant ACL reconstruction, it is now common practice to drill a hole in the distal femoral notch in order to allow for the bone marrow bleeding, with the associated SCs, to occur and enter the articular space.

SUMMARY

The utilization of PRP and Stem Cell therapy is becoming more commonplace for the treatment of orthopedic disorders. Controversies remain.

For PRP, better controlled studies are needed. Furthermore there are unanswered questions with regards to a host of issues : the best techniques for obtaining consistent platelet concentration, WBC concentration issues, sex issues, age issues, dosing scheduling issues, and others.

Stem cell therapy controversies have similarities to PRP issues. It is yet unanswered as to which disorders will best respond to SC therapy. Harvesting technique and preparation technique inconsistencies have likely played a role in the inconsistencies found in clinical study results.

Further controversy relates to the use of laboratory proliferated SCs. European studies seem to suggest that significantly improved results can be attained with laboratory proliferated SCs, which generate a more highly concentrated number of SCs. In the U.S. the cancer risk is a primary reason for disapproval of such manipulated SCs in human therapies.

All in all, PRP and Stem Cell therapy is here now, and it undoubtedly will increase in the future. Clearing up the aforementioned controversies will very likely enhance overall clinical results.

What's Really Holding Your Athletes Back

By: Jeff Weber MS, CSCS
Director OAK Athletic Development

Jeff Weber, MS, CSCS

What's holding back the athletes you work with the most? Speed, strength, power, conditioning, injuries? If you continually point to physical constraints as the biggest area of need for your athletes you are looking through the wrong lens and it's time to refocus on most athletes' true limiting factor; buy-in.

Introducing a specific injury reduction strategy or speed development program looks great on paper but if you have any real-world experience you know without hesitation, things never go quite as planned. We often make the mistake that the athletes we work with are robots who are all extremely motivated, focused disciplined and goal-driven. When in reality they are inconsistent, moody, and unpredictable and often times frustrating.

The harsh reality is that only a fraction of the athletes you work with are your 'ideal' athlete. You know the one's that perfectly fit the mold, the one's you can simply plug-in and they go to work like it's their job. Most of the team falls in the middle of the bell curve. They will do what they are asked and probably work hard but most will not go above and beyond what is required. If your athletes are not completely bought-in then everything else is secondary.

So how do you get your athletes to buy-in?

1) Meet your athletes where they are

This doesn't mean giving in or being soft. It just means you need to understand where they are mentally and physically. Understand what they are capable of giving and what they are willing to give at this point. Demanding excellence to someone who does not hold themselves to those same standards is a fruitless effort. You can't hold athlete's feet to the fire if they don't have any accountability themselves.

If you want to change a behavior you must change an athlete's self-image. If they only see themselves as being average their effort will always reflect that perception. Always strive to get to know your athletes more and what makes them tick.

2) Know what drives them

Drives direct reason, perception, decision making and even memories. Human drives are broken down into a four part model. These four drives help us understand what gets our athletes to act and helps us understand what we can do to compel them to take action.

- *Drive to learn*- To understand yourself better and the environment you live in and how to improve it.
- *Drive to bond*- To form meaningful relationships.
- *Drive to acquire*- To develop skill, retain information, resources that will help, gain control.
- *Drive to defend*- To defend our status, our home field, our relationships or what we have created.

The better we understand these basic drives the better we can make intentional use of them in our programs.

3) Use influence tactics

Using influence tactics allows you to better organize and plan your approach to connecting with your athletes. There are multiple tactics you can use but here are three we like to utilize.

Inspirational appeal- Appealing to your athlete or athlete's values, ideals or beliefs. This is useful when trying to affect a group decision. Coaches often use this tactic during team speeches or even in a vision or mission statement.

Rational persuasion- This is when we use logic or facts to persuade an athlete to buy-in to an exercise or concept we are trying to present. An example would be talking to an athlete who hates stretching about the direct correlation between injury rates and mobility. Another would be talking about the importance of staying hydrated and the negative effects on performance with as little as a 2% decrease in hydration levels.

Consultation tactic- This tactic is great for creating autonomy within the group. Simply asking for input or even suggestions from the group can do great things to increase motivation within the group.

4) Be the model, not the critic

Stop blaming your athletes for being lazy and unmotivated, maybe they are and maybe they aren't. Either way as a coach or trainer it's ultimately your job it get them better. This means, if they aren't responding the way you would like them to don't give up on them and point the finger. Yes, hold them accountable but you should be the one taking ownership for their results. Why, because if you don't and they don't who does? When you take ownership that means you will keep trying to connect, adapt and improve the process and the outcome. If you do not take ownership for your athlete's behaviors then you are in essence relinquishing control and saying it's on them to change. And it is on them, but you need to create a path that 1) they are attracted to follow, 2) know how to follow, and 3) are confident they can follow.

5) Programming is complex but coaching is complicated

Things like writing detailed periodization schemes for your athletes or teaching proper Olympic lifting technique are complex things. They can be difficult and multi-factorial but they are predictable and the outcomes and even the process is usually defined and scripted.

Coaching on the other hand is complicated. Complicated things do not follow a linear path and are highly unstable and unpredictable. There exists no perfect system or program that will predict mental change. The reality is complex issues cannot be solved in a reductionist fashion. This means there has to be quite a bit of improv going on. This may be challenging for many coaches and trainers who have a "train by the numbers" or "stay inside the box" philosophy, but when dealing with the most dynamic creature on this planet, a human, being adaptable is essential.

Athletic Trainer Spotlight: Haley Payne

Haley Payne, ATC
ATI Physical Therapy

ATI Athletic Trainer Haley Payne, who covers Manteno High School, is this issue's featured athletic trainer. Haley grew up in Shorewood, Illinois and attended Minooka High School where she was a member of the National Honor Society, served as a Student Ambassador and on the WYSE team (Worldwide Youth in Science and Engineering). Athletically Haley participated in soccer at Minooka and played club soccer with the Chicago Magic.

Haley attended Olivet Nazarene University in Bourbonnais, Illinois and became involved with Best Buddies and FCA (Fellowship of Christian Athletes) while also playing on the varsity soccer team. Haley became interested in athletic training after suffering several knee injuries during her career. She underwent four knee surgeries in high school and one in college which included tearing her ACL three times. Completing her rehab through ATI Physical Therapy, she was greatly influenced by her athletic trainer who introduced her to the profession. From her rehab experiences and professional training to become an athletic trainer, Haley wanted to help injured athletes going through similar situations. Haley hopes to convey that their isolation can be overcome through proper care and rehab, understanding and compassion plus some good old hard work. Haley tries to bring that same care and understanding she received to the current athletes she deals with at Manteno High School.

Haley's parents still reside in the Shorewood area along with a younger brother and sister. Haley and her husband David are proud parents to a son, Camden, who will be 7 months old the end of March. Filling out the family are three cats and a dog. In Haley's spare time she loves spending time with the family and doing pretty much anything outdoors. Haley and David are involved in their church's childrens' ministry and various service opportunities.

Career wise, Haley loves what she is doing – working with high school athletes – and feels blessed to have a job which gives her the best seat at sporting events. In the future Haley and her husband would love to begin a sports ministry as well as sports performance training with programs geared towards after school involvement.

NFL Combine at Lucas Oil Stadium

Once again Dr. Michael Corcoran and Dr. Carey Ellis worked the NFL Combine at Lucas Oil Stadium in Indianapolis, Indiana. Dr. Corcoran and Dr. Ellis joined their NFL medical colleagues in conducting medical examinations and evaluations of projected NFL draft picks for 2018.

Clinic Spotlight Dr. Timothy J. Friedrich

Podiatrist Dr. Timothy J. Friedrich and his staff are always on the move, it seems. With the much needed expertise of Dr. Friedrich and staff their week begins in Watseka at Iroquois Memorial Hospital and finally ends on Friday afternoon in the Frankfort office of OAK Orthopedics. In between they do wound care at Presence St. Mary's, see patients in the Bradley office, stop to treat patients once a month at the Gilman nursing home and then having surgical privileges at OAK Surgical Institute in Bradley, Silver Cross Hospital in New Lenox, Iroquois Memorial Hospital in Watseka, Presence St. Mary's Hospital and Riverside Medical Center in Kankakee. With this schedule it is not hard to see these multiple OAK settings keeps them very busy.

Dr. Friedrich and his staff see and treat an array of foot and ankle problems: extreme callus formation, ulcer debridement, ingrown toenails, nail trimming, lis franc fractures, casting for pediatric club feet, tenex procedure for chronic tendonitis, plus custom orthotics as well as numerous surgical cases related to foot and ankle. Dr. Friedrich works in conjunction with Dr. Rajeev Puri to complete the OAK Foot and Ankle team.

Dr. Friedrich joined OAK orthopedics after completing his Doctor of Podiatric Medicine at the William M. Scholl College of Podiatric Medicine at Rosalind Franklin University of Medicine and Science in North Chicago which was followed by a Podiatric Medicine and Surgical Residency at Loyola Medical in Chicago.

OAK is proud to have such a gifted podiatrist as Dr. Timothy Friedrich, with his knowledge and skill, along with his staff to help complete the continuum of care at OAK Orthopedics.

Lt. to Rt.: Betty C., Dr. Tim Friedrich, Logan B.

OAK Welcomes Physician Assistant Devon Saini

Devon Saini, PA-C

Physician Assistant Devon Saini has joined OAK Orthopedics and Dr. Rajeev Puri's clinic, and we certainly welcome her to OAK. Raised in Avon, Ohio a suburb of Cleveland where Devon parents still reside with their English Bulldog Farley. Devon also has two brothers, which completes a very busy family.

Devon attended Avon High School and was a very proficient soccer player who took those soccer skills and academic talents on to Eastern Kentucky University where she majored in Biology Pre-Medicine. While at EKU, in addition to playing soccer, Devon was treasurer of the Phi Sigma Biological Sciences Honor Society and a representative for the Athlete Advisory Committee. Honors include a member of the Dean's List, Dean's Award, President's Award and graduating Magna Cum Laude.

After graduating from Eastern Kentucky University, Devon was accepted and entered the Physician Assistant's Program at Midwestern University in Downers Grove, Illinois. Devon's interest in becoming a Physician Assistant, as well as her interest in orthopedics, stems from her own personal experiences as both a patient and athlete. As a patient, Devon experienced the importance of having a provider that is willing to understand one's goals and puts in the effort to ensure mental, emotional and physical well-being. As a Physician Assistant and provider, Devon strives to never forget on how it feels to be a patient. She constantly strives to help her patients achieve the highest quality of life by providing the best possible care. Devon is a member of the American Academy of Physician Assistants, a Certified Physician Assistant and holds certification as a BLS/ACLS provider.

Devon loves visiting her family and friends back in Ohio; and when free time is available, enjoying the outdoors with hikes, biking, running and working out. Devon also enjoys trying new restaurants and new foods, so we are thankful that OAK is so close to all those Chicago eatery's.

OAK welcomes Physician Assistant Devon Saini!

OAK Surgical Institute - The Areas Leading Outpatient Orthopedic Surgery Center

Oak Surgical Institute (OSI) is a state-of the-art ambulatory surgery center licensed by the Illinois Department of Public Health (IDPH) and accredited by the Accreditation Association for Ambulatory Health Care (AAAHC).

Oak Surgical Institute is a joint venture of OAK Orthopedic Surgeons and Riverside Medical Center. Serving the greater Kankakee area and beyond since 2003, OSI is the premier orthopedic outpatient surgery center of choice. We serve over 3,500 patients annually. All our surgeons are board certified-which means they have the knowledge, experience and skills necessary to provide the highest quality of care in their specialty.

Our Mission

Our mission is to provide patients access to surgical services that are the highest quality and delivered in the most efficient and cost efficient manner possible. We distinguish ourselves on our ability to provide each patient, who is entrusted in our care, with the highest degree of professionalism and compassion in returning them to optimal health.

Our Facility and Staff

Our remodeled facility provides a personal and comforting atmosphere with ample parking and easy access. Ninety-eight percent (98%) of our patients report they received exceptional care.

Procedures performed at Oak Surgical Institute include:

- Total Joint Replacement
- Arthroscopic Surgery
- Foot and Ankle Surgery
- Hand Surgery
- Knee Surgery
- Shoulder Surgery
- Hip Arthroscopy
- Interventional pain procedures

Our operating rooms look just like the operating rooms in a hospital because we have the same equipment and are held to the same standards for care. In fact, OSI offers the same state-of-the-art surgeries such as same day total joint replacement.

All our staff is specially trained for orthopedic surgeries. We have qualified nurses with a combined 70 years of nursing experience in the operating room and 100 years experience in the Recovery Room. Our entire care team is specifically trained in orthopedic care from preoperative preparation through the postoperative recovery.

Our operating rooms look just like the operating rooms in a hospital because we have the same equipment and are held to the same standards for care.

We understand that being scheduled for a surgical procedure is scary, which in why the staff at OSI takes the time to answer questions and help each patient focus on a successful outcome.

We appreciate the trust patients have placed in our staff, and we will continue to make every attempt to honor that trust by providing the highest quality of medical care that each patient expects and deserves.

Mary Kohl, Executive Director
Oak Surgical Institute

If you have any questions or comments please call Oak Surgical Institute at 815-928-9999.

Morris Lang Memorial Athletic Training Scholarship

Olivet Nazarene University student Noah Wilson is the recipient of the 2018 Morris Lang Memorial Athletic Training Scholarship as presented by Dr. Carey Ellis and Dr. Michael Corcoran.

Coming back stronger.

Orthopedic Care

In collaboration with Oak Orthopedics, St. Mary's has developed a comprehensive orthopedic program that includes:

+ Physician led orthopedic council
+ Minimally and non-invasive treatments
+ Pain Management
+ Orthopedic Recovery Program
+ Joint Camp
+ Rehabilitation

Living with pain?

Don't wait weeks for relief. We have orthopedic specialists who can see you within 72 hours. The launch of the Express Access Appointment is the latest initiative in Presence St. Mary's Hospital's plan to enhance their orthopedic program. The hospital is currently renovating their surgical unit to better accommodate patients during their stay.

Take the first step.

+ Schedule an appointment with a specialist
+ Schedule a free injury screening

Call 815.928.8050 or visit presencehealth-ortho.org/relief

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Presence®
St. Mary's Hospital

oakortho.com

For more than **20 years**,
ATI Physical Therapy has been a trusted leader for **millions** of patients nationwide.

For a complimentary injury screening or to find a location near you, call 855-MY-ATIPT or visit ATIpt.com

Local ATI Clinic Locations

Bourbonnais - N Convent St
1275 N Convent, Ste 3
Bourbonnais, IL 60914
815-936-1855

Bourbonnais - Mooney Dr
110 Mooney Dr, Ste 5
Bourbonnais, IL 60914
815-936-0611

Bradley Hand
400 South Kennedy Drive, Ste 500
Bradley, IL 60915
815-936-0400

Frankfort - S Harlem Ave
19552 S Harlem Ave
Frankfort, IL 60423
815-464-3525

Frankfort - W Bankview Dr
43 W. Bankview Drive
Frankfort, IL 60423
815-469-6676

Matteson - Lincoln Hwy
4555 Lincoln Highway
Matteson, IL 60443
708-283-0021

New Lenox – E Lincoln Hwy
2534 E Lincoln Highway
New Lenox, IL 60451
815-462-9420

New Lenox – Laraway Rd
806 Laraway Rd
New Lenox, IL 60451
815-462-8416

Orland Park – 15127 S La Grange Rd
15127 S LaGrange Rd
Orland Park, IL 60462
708-403-4497

Orland Park – 13125 S La Grange Rd
13125 S LaGrange Rd
Orland Park, IL 60462
708-671-1971

Tinley Park – S Harlem Ave
16651 S Harlem Avenue
Tinley Park, IL 60477
708-444-2467

**ATI reserves the right to change the time or day of the screening based on the location's schedule. Your screening will be confirmed within 24-48 hours. There is no cost associated with a complimentary screening. The screening process takes 15-20 minutes. Screenings are provided by a licensed provider, however are not inclusive of a comprehensive physical or occupational therapy evaluation or treatment.*

Corporate Office
790 Remington Blvd | Bolingbrook, IL 60440
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ATI PHYSICAL THERAPY

OAK ORTHOPEDICS
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400 S. Kennedy Dr., Suite 100
Bradley, IL 60915

Orthopedic Surgeons
Orthopedic Medicine/Sports Medicine
Spine and Pain Management

Specialties:

- Total Joints
- SportsMedicine™
- Hand & Upper Extremity
- Foot & Ankle
- Trauma
- Back & Spine
- Pain Management
- Arthritis & Osteoporosis
- Industrial Medicine
- Pediatrics

Services:

- OAK Surgical Institute
- X-ray Imaging
- MRI; Open & Extremity
- Athletic Development
- Orthotics & Supplies
- Prodigy Densitometer

Meet our Doctors

OAK Orthopedics is a team of orthopedic surgeons, primary care sports medicine specialists, pain management specialists, a podiatrist and physician assistants.

Our mission is to provide high-quality, orthopedic health care for all people with musculoskeletal disorders. We offer a unique approach to medicine with highly specialized treatment options and feel that the medical and surgical care we provide is the finest anywhere.


Wesley E. Choy, M.D.


Alexander E. Michalow, M.D.


Michael J. Corcoran, M.D.


Rajeev D. Puri, M.D.


Carey E. Ellis, M.D.


Eddie Jones Jr., M.D.


Juan Santiago-Palma, M.D.


Kermit Muhammad, M.D.


Ashraf Hasan, M.D.


Eric L. Lee, M.D.


Eric Varboncouer, M.D.


Timothy Friedrich, D.P.M.


Tom Antkowiak, M.D., M.S.


Ryan Sullivan, M.D.

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