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A Division of OrthoNJ

Life In Motion

Issue 4 / 2022

Celebrating 50 years of leading orthopaedic care.

CELEBRATING 50 YEARS OF EXCELLENCE


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Greetings from UOA

University Orthopaedic Associates

A Division of OrthoNJ

Darleen Caccavale, CEO

We are thrilled to be back and able to bring you our fourth edition of the UOA "Life in Motion" magazine featuring articles from our highly skilled and nationally recognized orthopaedic surgeons. These past two years have seen unprecedented COVID-related changes in how we live our lives and how we have provided orthopaedic care to our patients. Despite all of these challenges, UOA has remained true to our mission of providing the most current, highest quality, personalized healthcare services available, and the pursuit of excellence in orthopaedic treatment, medical education and training, clinical and bench research, and the promotion of community health have remained paramount.

Focused on their area of expertise, each of our physicians is fellowship trained, board certified or board eligible, and strives to provide the highest level of patient care based on the best available medical evidence. Providing care for pediatric through adult ages, our physicians have subspecialty training in sports medicine, upper extremity, spine, joint replacement, foot and ankle, trauma, and physical medicine and rehabilitation. From the clinical setting to the sidelines, you will find several of our physicians at local high schools and collegiate sporting events as we provide care to athletes from Rutgers and Princeton Universities, the Somerset Patriots as well as US Ski and Snowboard Olympic teams and USRowing.

Our patients experience the latest technology and concepts available coupled with compassionate care. With academic appointments in the Department of Orthopaedic Surgery at Rutgers, Robert Wood Johnson Medical School, our physicians train future orthopaedic surgeons. This educational experience is a two-way street with residents gaining vital experience through teaching and physician mentoring. Our physicians benefit, as they must stay cutting edge with the newest orthopaedic procedures and current research. Ultimately, the patient is the benefactor of this educational component.

This year we are also very excited to celebrate with you, as this marks our 50th anniversary as New Jersey's leading orthopaedic practice! We have been treating families for their musculoskeletal needs for half a century. Since 1972 we have stood true to our mission and have expanded and continually evolved; currently with twenty-four providers and five state of the art facilities, to guide each patient through every step of the process from diagnosis to treatment.

As change is ever present and compelled by mounting forces in the healthcare arena a need for consolidation of orthopaedic services became apparent. University Orthopaedic Associates has joined forces with six other nationally recognized orthopaedic practices in New Jersey to form OrthoNJ. This venture does not alter our mission and you will continue to receive the same great care at our existing locations and enjoy the same valued relationships you have had throughout the years. The style of our logo will change a bit to recognize our OrthoNJ affiliation and we look forward to our collective continued growth as an organization to bring you the best independent orthopaedic care.

In this edition we have included information that can help you understand a variety of orthopaedic concerns and problems. You can also view our UOA on Demand Series started during COVID to bring you relevant information on various orthopaedic conditions, from our subspecialty teams. Please visit our UOA YouTube channel at: www.youtube.com/c/UOANJOrtho

This publication would not be possible without the support of our generous sponsors who join us on this journey to provide quality care and education. We also thank you, our patients, referring physicians, therapists, and athletic trainers for the trust you have placed in us and look forward to our future collaboration!

Cheers -
Darleen Caccavale, CEO

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In This Issue

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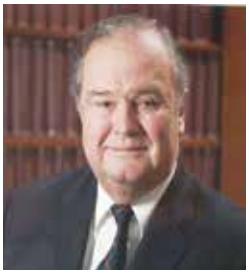
Fifty Years of Orthopaedic Care

2022 marks the fiftieth anniversary of University Orthopaedic Associates. As we celebrate this milestone, it is important to look back at our roots and appreciate how far we have come. From a humble beginning, we have evolved into the state's premier, multi-specialty trained, orthopaedic practice, with 24 fellowship trained physicians, seeing patients in 5 offices across central NJ.

Dr. Joseph Zawadsky

The founding father of UOA was Dr. Joseph Zawadsky who was a native of South River, NJ, attending Princeton University and completing medical school at Columbia in 1955. He served in the AirForce as a physician and he began practicing as a primary care physician in 1960 in South River where he delivered babies and tended to the general medical needs of the community. With the passion to become an orthopaedic surgeon, Dr. Zawadsky went on to complete his orthopaedic residency while still maintaining his primary care practice in South River. Each day he would commute from South River into New York to complete his residency at Columbia. Commuting into the city allowed Dr. Zawadsky the opportunity to continue to provide care to the community in South River as he would see patients in the evening when he returned from his training at Columbia. In 1968, Dr. Zawadsky, a former Princeton University football player began serving as the Princeton University Orthopaedic consultant providing care to the Princeton athletes. Dr. Zawadsky, a star athlete himself, would embrace this responsibility with much pride and commitment.

After receiving additional training in joint replacement surgery at Columbia "Dr. Z" as he was often called, was the first person to do joint replacement surgery in the state of New Jersey. His influence over the central New Jersey community and his leadership among other orthopedic surgeons helped to garner him the nickname as the "godfather of orthopaedic surgery in the state of New Jersey". His dedication, character, and ideology continue to impact the group 50 years later.



Dr. Joseph Leddy

In 1972, Dr. Joseph Leddy joined Dr. Zawadsky in his office in New Brunswick. Leddy, originally from Bayonne, a graduate of Holy Cross, also served in the AirForce, attended Jefferson medical school, and completed his residency at Columbia-Presbyterian. Dr. Leddy received advanced training in hand and upper extremity care during his fellowship at USC. This was unique for orthopaedic surgeons in the 1970s as advanced fellowship training was rare but distinctive. He would go on to become a nationally recognized hand surgeon who advanced the field of hand surgery, developing new techniques, writing numerous articles and book chapters.

Zawadsky and Leddy laid the foundation for what is known as University Orthopaedic Associates (UOA). The mission of the two doctors was to provide the most current and technologically advanced and personalized healthcare services available. They were both committed to providing cutting-edge care and both had a strong interest in educating future physicians and improving the field of orthopaedic surgery and patient care. The duo provided a highly personalized bedside manner that was equal doses of medical attention and comic relief. The well-being of the patient was always at the forefront of care. 50 years later, these same principles are still embodied by the group.

Dr. Zawadsky and residents

Dr. Zawadsky founded the UMDNJ-Robert Wood Johnson Medical school Orthopaedic Surgery residency program which was accredited in 1976. He would serve as its chairman and the chief of orthopaedic surgery at Robert Wood Johnson Hospital until 1998 when the chair position of the residency program was taken over by Dr. Leddy. Dr. Zawadsky had a passion for education and one of his most cherished accomplishments was that he helped to train 74 orthopaedic residents over his tenure.

Dr. Michael P. Coyle

The group began in a small building at 205 Easton Avenue, across the street from St. Peter's hospital. The group quickly outgrew it's original office space as they added Dr. Michael P. Coyle. Coyle a graduate of Notre Dame, an Army veteran of the Viet Nam war, completed his medical school at Columbia, his residency at U California Moffit Hospital, and fellowship in hand and upper extremity care at Columbia-Presbyterian. One of Coyle's early responsibilities was the involvement with athletic care as the orthopaedic consultant at Rutgers University. One which Coyle would embrace for 40 years.

215 Easton Avenue

The group found a new home right next door to the 205 Easton Avenue location at 215 Easton Ave. Leddy and Coyle would visit several leading practices across the country to gather ideas to make their new location a top-notched facility. This location was established ideally for three physicians /day to see patients, but in a stretch, it could handle a maximum of four.

Dr. Stephen Cook

Dr. Timothy M. Hosea

In the mid-1980s, Dr. Stephen Cook, an ex-navy fighter pilot and fellowship-trained spine specialist, and Timothy M. Hosea, a Harvard educated, and fellowship trained Sports Medicine physician were added to the group. Tim Hosea worked with Michael Coyle serving as the orthopaedic consultant for Rutgers University. A privilege Hosea cherished until his premature death in 2015. As an Olympic qualifying rower, Dr. Hosea was also deeply involved with US Rowing and UOA quickly became the go to site for all rowing related injuries. Dr. Cook brought much-needed spinal surgery expertise to New Brunswick.

Drs. Mark S. Butler and David Harwood joined the group in 1991. Harwood was a Princeton graduate who completed his Joint Replacement fellowship at the Cleveland Clinic. Butler was a Lafayette and Lehigh graduate who would go on to complete his foot and ankle fellowship at Union Memorial and trauma fellowship at the Maryland Institute of Emergency Medical Services. These additions marked an important era as both completed their residency training at Robert Wood Johnson and were top products of the Zawadsky/Leddy/Coyle-driven residency program before completing their fellowship training.

In 1996, the group added Jeffrey Bechler, a Dartmouth graduate, and a product of the RWJ residency program, who completed a fellowship in Sports Medicine at the Kerlan-Jobe Clinic in San Diego. Bechler would go on to take over the reins of Princeton sports coverage where he currently serves as the orthopaedic consultant.

In 1997 Charles J. Gatt, a graduate of Lafayette, also an alumna of the RWJ resident program, who received his Sports Medicine fellowship training at the Cleveland Clinic joined the group. Gatt provided services to Hillsborough high school and several years later, he would become the orthopaedic consultant for Rider University, Montgomery high school, and eventually Rutgers University.

As orthopaedic physicians for Rutgers, Princeton, and Rider Universities, UOA's sports medicine reputation was well respected in the state and their recognition grew outside of New Jersey as many of the physicians were involved in research, presenting on the regional, national and international stage.

With the additions of Bechler and Gatt, the group was quickly realizing that they needed to find additional office space. Dr. Michael Coyle commented "with each new physician, the group added the physician's name to the side of their building, and including all the names was becoming problematic. We designed 215 Easton Ave for 3 to perhaps up to 4 physicians to see patients each day. We needed to expand."

The group expanded its footprint into Princeton in 1997 as they opened up an office at 211 N. Harrison Street. Princeton provided a valuable and convenient space to care for the Princeton community. In the early 2000's UOA would continue to expand their footprint further as they utilized space in the St. Peter's Sports Medicine facility on Easton Avenue as a way to ease the patient load in the New Brunswick office.

In 2002, UOA saw the arrival of Timothy Leddy, Joseph Leddy's son, who was a graduate of Lehigh, he completed his medical degree at Jefferson Medical College and his residency at UMDNJ-Robert Wood Johnson before completing his hand and upper extremity fellowship at the Mayo Clinic. Timothy Leddy noted that "it was very special for me to join UOA and follow in my father's footsteps. It's been fabulous to work with such a special group of doctors, staff and patients. We are products of the patients we see and I cherish the patient interaction. Many of my patients were patients of my father,

211 N. Harrison Street • Princeton

or have been seen by other physicians in the group, and that loyalty is truly special."

In 2005, UOA continued its growth with the addition of Carlos Sagebien and David Polonet. Sagebien, a graduate of Hamilton College and UMDNJ-RWJ medical school and residency program, before completing his trauma fellowship at the University of Maryland Shock Trauma Center. Polonet, a Stanford graduate, attended SUNY Stony Brook medical school and residency before completing his Trauma fellowship at the Harborview Medical center. Sagebien and Polonet provided trauma and advanced fracture care expertise for the group. Sagebien would become the division chief of orthopaedic trauma at Robert Wood Johnson Hospital; a level I Trauma center. Polonet would become the chief of orthpaedic trauma care at Jersey Shore University Medical Center in Neptune. Each providing advanced fracture care expertise for the group.

With continued growth, it was quite evident that the model of a UOA surgeon, which was established early on by Zawadsky and Leddy, was a top student, received training from a top program, completed fellowship training in a sub-specialty at a premier program and was highly skilled as an orthopaedic surgeon. Each new addition also demonstrated a commitment to education, a patient-first mentality, and a desire to advance the orthopedic profession. This is a model, which continues today.

With involvement at Jersey Shore University Medical Center, the group realized it needed a presence in Monmouth County. In 2005, UOA opened an office in Wall. Originally, office space was shared with another physician's group, but quickly the group expanded to their current location at 4810 Belmar Blvd, Wall Twp which has undergone two renovations since first opening in 2008.

In 2007, UOA welcomed Drs. Gino Chiappetta and Christopher Doumas to the group. Chiappetta was a Rutgers graduate, completing his internship and residency at the University of Miami before completing his spine fellowship at NY Beth Israel. Doumas, a William and Mary graduate, also completed his internship and residency from the University of Miami, before completing his hand and upper extremity fellowship at the University of Pennsylvania. Doumas currently serves as the director of hand surgery at Jersey Shore University Medical Center.

2 Worlds Fair Drive • Somerset

Joining the group in 2011 was Dr. James T. Monica. Monica graduated from Johns Hopkins, completed medical school at Columbia, an internship at Brigham and Women's Hospital, a residency at Harvard, and fellowship in hand and upper extremity, and another in open and arthroscopic shoulder surgery at Harvard/Massachusetts General Hospital. Dr. Monica would eventually serve as the team physician at Hillsborough High school and orthopaedic consultant at Princeton University.

2012 was a big year for UOA as they moved their main office out of New Brunswick and into their current 60,000-foot location at 2 Worlds Fair Drive, in Somerset. The move brought much-needed space for an expanded patient waiting area, additional exam rooms, administrative office space, therapy, and imaging including onsite MRI. The third floor features a three-suite outpatient surgical center. The group brought in Dr. Stephen Kayarios, in 2012 as a dual fellowship-trained trauma and joint replacement specialist. Kayarios, a graduate of Johns Hopkins, UMDNJ-RWJ medical school, completed his internship, residency, and trauma fellowship at Brown, and additional fellowship year at Hospital for Special Surgery to help meet the growing needs of an aging adult population.

Two years later, Drs. Kenneth G. Swan and Mathew McDonnell joined UOA in 2014. Swan, a Cornell graduate, completed his internship and residency at UMDNJ-RWJ, and fellowship in shoulder surgery and sports medicine at the University of Colorado and had been practicing in central New Jersey, providing sports coverage for the Woodbridge schools

for several years before being recruited to join UOA. McDonnell, a College of New Jersey graduate, completed his medical degree at New Jersey Medical school, internship, residency, and Trauma Fellowship at Brown, followed by an additional fellowship in Spine surgery at Rothman Institute and Thomas Jefferson University which offered much expertise in degenerative spinal conditions.

As the Wall practice grew, so did the need for an additional joint replacement specialist. Dr. William Baione joined the group in 2016. Baione, a graduate of the University of Miami, completed medical school at Cornell, internship and residency at UMDNJ-RWJMS, followed by a joint replacement fellowship at the Florida Orthopaedic Institute.

2018 marked the arrival of four new physicians to the group as Drs. Patrick S. Buckley, Justin Fleming, Sergei Pushilin, and Robert Pannullo joined UOA. Buckley, a Villanova graduate, attended medical school and completed his residency at the Thomas Jefferson and the Rothman Institute, before completing his sports medicine fellowship at the Steadman Philippon Research Institute. Fleming, a Widener graduate, attended medical school at Temple and he received his foot and ankle training at Emory Healthcare and gained additional training in fracture management with the US Army. Pushilin, a Brooklyn college graduate, attended medical school and completed his residency at SUNY Downstate, before completing his trauma fellowship at the University of Pittsburgh Medical Center. Pannullo, an Upsala graduate, completed his medical degree at Wayne State, before completing his fellowship in interventional spine techniques and pain management from OSS Health in York, PA.

2019 saw the addition of Drs. Michael Lu, Cristobal Beiro, Ryan Coyle, and Ravi Verma. Drs. Lu and Beiro were co-founders of Garden State Bone and Joint in Woodbridge before joining the group. Lu earned his medical degree from Washington University in St. Louis and completed both

Woodbridge

internship and residency at Rutgers- NJ School of Medicine before completing a fellowship in shoulder and elbow surgery at the University of Pennsylvania. Beiro a former Navy corpsman, completed his medical degree, internship, and residency at Rutgers – New Jersey School of Medicine before completing a fellowship in sports medicine at Union Memorial Hospital. Coyle attended Princeton, completed his medical degree at Columbia, internship, and residency at Lennox Hill, before completing his fellowship in hand and upper extremity at NYU. Ryan Coyle is also the son of Dr. Michael Coyle, one of the original members of the UOA team who retired in 2017.

provide their patients the best of care within the same group. The subspecialties offered by the group today include hand and upper extremity, sports medicine and arthroscopic surgery, joint replacements, foot and ankle, spine, trauma, fracture care, and pain management. The profile for the ideal orthopaedic surgeon established by Dr. Zawadsky and Dr. Leddy 50 years ago is quite evident in all of the physicians who are a part of the UOA team. To date, the group has collectively performed tens of thousands of successful surgeries. Over the past 50 years, the mission has remained the same. UOA is dedicated to providing the most current, highest quality, and personalized

"I was so honored and excited to joint this group. Dr. Joe Leddy took care of me as a kid. There is so much history, so many accomplishments, and it offers a great mixture of skills and expertise. Patients value the history of the group, as there is a ton of patient loyalty. That is special. The group sees and manages many advanced cases that you would only see in a big city hospital. The involvement with teaching the residents keeps you on your toes. They challenge you to get better and to be on the top of your game. The bar has been set very high and I have big shoes to fill. It's great!" *– Ryan Coyle*

Rt 9 • Morganville

Dr. Verma, a spine specialist, New Jersey native, attended the college of New Jersey and then completed his medical degree from from Rutgers – New Jersey Medical School. He completed his residency at the New York Medical College and his Spine Fellowship at the Hospital for Special Surgery in New York.

The group continued to increase its footprint in central New Jersey opening an office on Rt 9 in Morganville in 2019, and another office on Rt 1 in Avenel in 2021. Both facilities offer onsite therapy services as well.

Over 50 years UOA has experienced tremendous growth in the number of physicians who are part of the UOA team, but also in the number of sub-specialty trained physicians who can

health care services available. The physicians of UOA continue to be dedicated to the pursuit of excellence in orthopaedic treatment, medical education and training, clinical and bench research, and the promotion of community health.

The success of the group is not without the tremendous efforts of our hard-working support staff, including physician assistants, nurse practitioners, nurses, athletic trainers, medical assistants, radiology techs, physical & occupational therapists, scheduling, insurance, reception, and administrative team.

We would also like to thank our patients who have put their trust in our group. Some of you were delivered as babies by Dr. Zawadsky in South River and you and your family continue to come to UOA for your care. We are truly grateful for your unending support.

As we celebrate this milestone, it's important to reflect on our beginnings and celebrate our journey of growth and development. We look forward to our continued growth and maintaining our high standard of care as New Jersey's Leading orthopaedic practice.

Scan the QR code to listen to a discussion amongst our physicians about UOA's history.

BY JUSTIN FLEMING, D.P.M., F.A.C.F.A.S

Total Ankle Replacement

What Is Total Ankle Replacement?

Total ankle replacement (also called total ankle arthroplasty, or TAA) is a surgical option for patients with arthritis of the ankle. This involves resurfacing the end of the tibia (shin bone) and the talus (lower bone of the ankle) with metal components and placing a plastic piece in between them.

This operation can relieve pain and maintain motion in the arthritic ankle joint and is an alternative to arthrodesis (ankle fusion), which can relieve pain but eliminates motion in the joint. Another benefit of maintaining ankle range of motion is that the surrounding joints in the foot do not take on any additional stress and create accelerated degeneration. Although it does not have the same long-term track record of hip or knee replacement, shorter-term studies on ankle replacement look very promising.

Why Does My Ankle Hurt?

Ankle arthritis is degeneration of the cartilage. It creates a painful, stiff joint that can affect your quality of life.

The bones of your ankle are covered by a smooth and resilient substance known as cartilage. It is cartilage that allows the ankle joint to move smoothly and painlessly. Osteoarthritis is a disease process in which the cartilage becomes thinner and rougher. When this occurs, joint motion becomes stiff and painful.

The ankle is the most commonly injured joint in the body and bears the most weight per square centimeter. The cartilage is very thin in the ankle compared to the hip and knee.

Scan to watch a video of a recent UOA On Demand interview with Dr. Justin Fleming as they discuss Ankle Replacement Surgery

The ankle bears five to seven times of your body weight during walking. Arthritis in the knee and hip often results from normal "wear and tear" of the joint due to aging, but ankle arthritis most commonly occurs after trauma to the ankle. This trauma may be caused by:

- Ankle fracture
- Ankle instability
- Ankle sprains
- Malalignment of the foot or leg

Am I a Candidate for TAA?

If you have painful arthritis and nonsurgical treatment has failed, you may want to talk to your doctor about TAA.

You are a good candidate for ankle replacement if you have maintained ankle range of motion and have minimal to no ankle deformity.

Typically, older patients who place less demand and impact on the ankle joint are great candidates; however, younger patients (usually in their 50s) are beginning to have replacements as well.

Who Should NOT Have an Ankle Replacement?

An ankle replacement is not the best option for every patient with ankle arthritis. Ankles that are severely deformed or unstable or have had an infection in the past may be better treated with fusion. Similarly, patients with serious medical problems such as diabetes, obesity or problems with blood supply are generally not good candidates for ankle replacement.

TAA is not recommended if you have:

- An active or prior deep infection in the ankle joint
- Inadequate bone to support the implants
- Neuromuscular disease that impairs muscles, resulting in poor muscle tone and function in the ankle
- Charcot neuropathy (loss of sensation in foot and ankle)
- Severe ankle deformity
- Poor musculature quality at the surgical site

How Is the Surgery Performed?

Ankle replacement surgery is performed using general anesthesia with a nerve block around the knee for postoperative pain control. A tourniquet is placed around the thigh to help control bleeding and improve visualization during surgery.

The surgeon makes an incision in the front or side of the ankle depending on the type of implant used. Guides are then placed on the bones, and their positions are viewed with an X-ray to determine accurate location before any cuts are made. The surgeon cuts the bones, which allows for the placement of metal and plastic components to recreate the ankle joint.

Some patients have tight calf muscles or an Achilles tendon (which connects the calf muscle to the heel bone) that needs to be lengthened to help increase the range of motion at the ankle joint. If that is the case, the surgeon does a lengthening procedure as well. Then the surgeon closes the incisions with sutures or staples, and the ankle is placed in a well-padded splint.

Dr. Fleming has been performing ankle joint replacement since 2013. Precise placement of the implant is thought to be critical to prolong the working life of the replacement. Based

on this Dr. Fleming uses a unique preoperative planning technique through three-dimensional templating and virtual surgery utilizing patient-specific cut guides, which also reduce overall surgical time needed for the case. Additional information regarding this process is included below.

UOA uses the following devices to perform total ankle replacement:

- **INBONE™ Total Ankle System** – The INBONE™ Total Ankle System is a modular prosthesis installed via the first and only intra-medullary alignment – PROPHECY™ INBONE™.
- **PROPHECY™ Preoperative Navigation System** – Through computer imaging and CT scan, PROPHECY™ guides provide the alignment accuracy of the traditional Total Ankle System while reducing surgical and fluoroscopic steps. PROPHECY™ Preoperative Navigation Guides reduce intraoperative steps to simplify surgery.
- **INFINITY™ Total Ankle System** – The INFINITY™ Total Ankle System consists of a highly polished metal talar dome, a titanium alloy tibial tray, and an ultra-high molecular weight polyethylene insert (UHMWPE). All components are available in varying sizes to best match your anatomy.
- **INFINITY™ with ADAPTIS™ Technology Total Ankle System** – The INFINITY™ with ADAPTIS™ Technology Total Ankle System consist of ADAPTIS™ 3D printed, porous metal tibia tray, the option of a chamfered or flat cut ADAPTIS™ talar dome, and the EVERLAST™ Highly Cross-linked polyethylene. All components are available in varying sizes to best match your anatomy.

End-stage ankle arthritis is a life-altering condition. There are a number of different nonoperative treatment options. If the nonoperative treatment is not effective, surgery can be successful in relieving your pain. Both an ankle fusion and a total ankle replacement can relieve your pain, while a total ankle replacement preserves your motion at the ankle joint. Request an appointment with a foot and ankle specialist at UOA to discuss your ankle replacement options.

Scan to learn more about Justin Fleming, MD

Considering Joint Replacement Surgery?

You've come to the right place!

Total Joint Arthroplasty or "Joint Replacement" surgery is not new. Though relatively commonplace today, total joint arthroplasty has a long and storied history, which has resulted in some significant refinement in modern day joint arthroplasty.

In 1891 at the 10th International Medical Conference, Thimistocles Gluck, a German surgeon, presented the results from an experiment where he used ivory to replace the femoral head of a human patient with deteriorated hip pain. This presentation was the first of its kind and it stimulated interest in joint replacement surgery. Over the next 50 years, the concept and process of joint replacement surgery were studied, and by the 1940s the first metal prosthesis was developed and tried. Over the next 50 years, joint replacement surgery grew in popularity as the prosthesis improved and the procedure was refined. Surgeons still experienced issues with prosthesis positioning, implant failure, loosening, and breakdown. Surgical complications like infection, which commonly occurred in as many as 10% of cases in the 1980's, blood loss, clotting issues, chronic pain and extended hospitalizations were common.

During the last 20 years, there have been some significant developments on all fronts of joint replacement care. In particular, we have seen improvement in pre-surgical planning, prosthetic design, surgical technique, infection and blood clot prevention, and pain management. We have adopted many of these changes at UOA in order to improve outcomes and provide a better patient experience with joint replacement surgery.

Pre-surgical planning

The use of improved pre-operative imaging has helped to improve pre-operative planning and matching of surgical implants. No longer is joint replacement a "one size fits all" procedure but is tailored to fit each patient. Pre-review of enhanced imaging can improve the implant's proper placement, improving stability of the joint and minimizing the incidence of dislocation. Utilization of pre-surgical and intra-operative antibiotics has helped decrease the incidence of infection to about 0.5% of all cases. A 20-fold improvement from the 1980's! Administration of blood thinners has helped to reduce the incidence of blood clots following the surgery. Pre-operative education has improved patient expectations and outcomes and prepares patients for early physical therapy. Utilization of a patient pathway helps guide patients through the surgical process, answer common questions, and identify problems earlier, ultimately improving recovery.

Prosthetic design

There have been many design advancements in the actual prosthetic device over the years. Perhaps one of the most significant advancements in prosthetics has been made with the use of highly cross-linked polyethylene (a sophisticated plastic bearing) that allows the implant to last longer. Additionally, highly porous titanium materials have improved the bone-implant interface, where newer designs incorporate and promote bone ingrowth and biocompatibility. Cementless fixation for hips and emerging cementless technology for knees

has improved bone-implant stability and helps to reduce joint loosening. Ultimately, this helps to improve durability and longevity of the joint. Older prostheses were only expected to last 10 years. Today's hip and knee implant should last at least 25 years. Specialized surgical tools have been developed to improve prosthesis placement and facilitate the surgical technique. Since implants "last longer" total joint arthroplasty can be utilized for younger patients who no longer need to worry about their joint wearing out or failing.

Surgical Technique

Refinement of surgical approach and the use of minimally invasive techniques have helped to reduce associated blood loss and injury to adjacent muscles and soft tissues. A classic example of technique refinement is the anterior approach for hip replacement surgery where surgical entry is gained through a small 4-6" incision over the anterior hip splitting the anatomic soft tissue interval instead of cutting through muscles. Use of a physician driven robotic device or computerized navigation system helps to ensure precise component placement and improve accuracy of bone cuts. All of these techniques and advancements have also helped to decrease blood loss and surgical procedure times.

Thirty years ago, patients would spend 1-2 weeks in the hospital following surgery with many transitioning into intermediary care facilities before being able to safely return home. Today, prolonged hospitalization is no longer necessary and is extremely shortened for the vast majority of patients. Joint replacement surgery can also frequently be performed on an outpatient basis for qualified candidates. Extended visits to post-surgical rehabilitation facilities are a thing of the past as the overwhelming majority of patients are discharged directly to their homes for recovery.

Post-Surgical Care

Improvements in post-surgical wound dressings help to decrease the risk for infection. Pain management has been tremendously improved through the use of long acting opioid-sparing medications and the use of nerve blocks during surgery, which allow prolonged pain relief and encourages immediate weight bearing and early motion following surgery. Tracking patient reported outcomes helps us to closely monitor the progress of our patients and be able to intervene sooner if needed. Enhanced physical therapy guidelines help to improve strength, stability and mobility in order to ensure a quicker return to activities of daily living.

Dr. David Harwood in surgery

Experience Really Does Matter!

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William Baione, MD **David A. Harwood, MD** **Stephen Kayiaros, MD**

CASE REPORT

TRUMATCH™ Graft Cage – Long Bone for the Treatment of Critical-Sized Long Bone Segmental Defects

William B.T. Kent, MD

Introduction

Critical-sized segmental bone defects (CSSBD) are a challenging problem for numerous reasons. Several operative interventions have been well described in treating CSSBD in long bones, including bone transport, autogenous bone grafting, vascularized bone transfer, and the induced membrane technique.[1-8] Autogenous bone grafting remains the standard in the treatment of atrophic and oligotrophic nonunions and delayed unions. The induced membrane technique is previously well described and includes placement of a cement spacer in the first stage followed by autogenous bone grafting once the osteoinductive membrane has formed around this spacer.[5-7] Several factors influence healing after bone grafting, including the properties of the local graft site, host biology, and strain at the bony defect site.[8,9] Previous studies examining time to bony consolidation and resorption of the graft suggest that the graft bed plays an important role in healing at the defect site.[10]

TRUMATCH™ Graft Cage – Long Bone is a 3D printed resorbable implant designed specifically to patient anatomy and bone defect size. Patient specific design provides optimal retention of graft in desired anatomical locations for the healing duration by matching patient's anatomy. Its versatile design allows for use with IM nails, plates/screws, or external fixation devices. The purpose of this study is to report the surgical technique and early outcomes of 3D printed resorbable TRUMATCH Graft Cage – Long Bone in the treatment of CSSBD.

1. SURGICAL TECHNIQUE

1a. Preoperative

After initial first stage of the induced membrane technique with debridement and placement of cement spacer, a CT scan is obtained for planning and creation of the 3D printed graft cage. For osteomyelitis or infected nonunion cases, antibiotic impregnated cement is placed at the bone defect site with focused antibiotic therapy based upon intraoperative cultures. After completion of 6-week course of antibiotics, with subsequent antibiotic holiday, repeat inflammatory labs are drawn to ensure eradication of infection. After normalization of labs and clinical findings demonstrating healed wounds without signs of persistent infection, stage two can proceed. The 3D printed graft cage can be used to address critical-sized defects from 2.5 to 10 cm.*

1b. Intraoperative

The second stage consists of exposure of the membrane and defect site, harvesting autogenous bone graft, application of the graft cage, and stabilization using intramedullary implant or plate and screw constructs or both—depending on patient factors and surgeon preference. The autogenous bone graft can be obtained from a variety of locations. The author prefers bone graft from the femur using the Reamer Irrigator Aspirator (RIA 2) as a first choice and secondarily the iliac crest or the proximal tibia, or a combination of the three donor sites.

*Available in sizes 2.5 to 10 cm in US. Where available outside US, sizes 2.5 to 30 cm are available.

CASE REPORT

1c. Postoperatively

The postoperative plan will depend on surgeon preference, size, location of the segmental defect, and implants used in stabilization. The author's preference is to allow for partial weight-bearing in lower extremity defects stabilized with an intramedullary implant. For those stabilized with dual implants (plate/nail combination) immediate weight-bearing may be considered. Physical therapy is initiated in the hospital for mobility and range of motion. Routine patient follow-up occurs at 2 weeks, 6 weeks, 3 months, 6 months, 1 year, and yearly intervals thereafter.

2. CASE REPORT

The following images (Figures 1-5) show a case example of 72-year-old female who sustained a closed supracondylar distal femur fracture treated at an outside hospital. Upon referral to our institution she was three months post index procedure with implant failure and a lateral draining sinus (Figure 1). At baseline (preinjury) the patient was fully ambulatory without assistive devices and without preexisting knee pain. On examination, in addition to the 2-cm lateral draining sinus, there was surrounding erythema at the laterally based incision. She was, otherwise, neurovascularly intact. To address her infected nonunion of the distal femur, she underwent irrigation and debridement with a 7-cm bony resection at the infection site. An antibiotic impregnated cement spacer was placed with an antibiotic impregnated cement coated intramedullary nail (Figure 2). Cultures were positive for MSSA and she was placed on a six-week course of IV antibiotics. After completion of antibiotics, her inflammatory markers had all normalized and her incisions were all healed. She was then indicated for reconstruction of her 7-cm segmental defect. A CT scan had been obtained after the first stage for creation of the 3D printed TRUMATCH Graft Cage – Long Bone.

Figure 1. AP and lateral radiographs upon presentation of patient to this surgeon, with implant failure and infected nonunion of a supracondylar distal femur fracture.

CASE REPORT

Figure 2. After debridement and segmental bony resection with placement of antibiotic cement spacer and coated intramedullary nail.

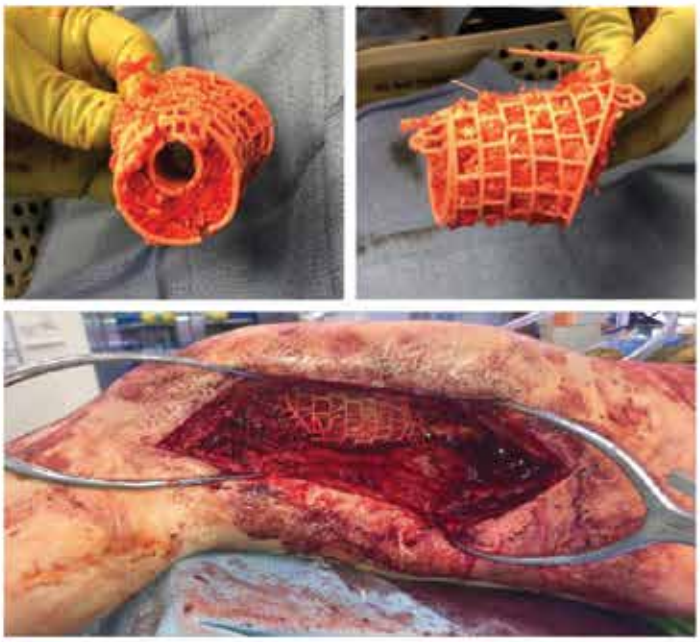

Figure 4. Intraoperative photos with packing of autogenous bone graft obtained from the contralateral femur using RIA 2 (top) and clinical photo of the graft cage in place at the segmental defect site.

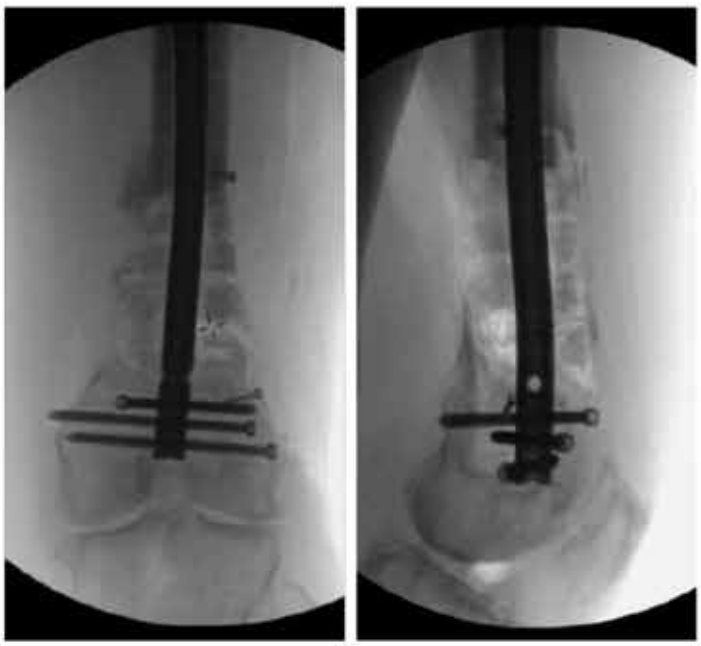

Figure 3. After clearance of her infection, induced membrane technique with TRUMATCH Graft Cage – Long Bone was used to address her segmental 7.5-cm segmental defect. Images show patient immediately post-op with graft cage inserted along with exchanged intramedullary nail.

Figure 5. AP and lateral radiographs at 10 months post-op. The patient was fully ambulatory with no pain.

CASE REPORT

2a. Results

Two patients with CSSBD of the LE have been treated with staged induced membrane technique (IMT) with definitive bone grafting using TRUMATCH Graft Cage – Long Bone at our academic Level 1 trauma center. We retrospectively collected data regarding patient demographics, comorbidities, complications, and follow-up.

One patient had CSSBD of the distal femur and one had a CSSBD of the tibia shaft. The average defect size was 8.75 cm (range 7.5 cm to 10 cm). Both patients were treated with a staged IMT. The first stage included extensive debridement, antibiotic cement spacer placement, and intravenous antibiotics. After clearance of infection (confirmed by lab values and clinical examination), both patients underwent intramedullary nailing (retrograde femoral nail and suprapatellar tibial nail) and placement of TRUMATCH Graft Cage – Long Bone with autogenous bone graft collected using RIA 2. Average follow-up after definitive surgery was 13 months. All patients were fully weight bearing at last follow-up. There were no early complications noted.

2b. Discussion

The TRUMATCH Graft Cage – Long Bone is a 3D printed, bioresorbable, patient specific implant that provides graft support, maintaining the bone graft at the segmental defect site. The design allows for nutrient and osteoinductive protein access to the graft site for bone remodeling. Early results of the 3D printed TRUMATCH Graft Cage – Long Bone appear promising as a treatment option for critical-sized segmental bone defects of the femur and tibia.

3. SURGEON PROFILE

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BY MARK S. BUTLER, MD

Preventing Biking Injuries

The Covid pandemic changed our lives in many different ways. For many, the pandemic created more time at home and provided people time to get outside and exercise. Gone were the days of group exercise programs in the gym and many of us converted to solo exercise programs, mostly of an outdoor nature. One form of exercise that became very popular was bicycle riding. Within the first few months of the pandemic bicycle shops were emptied of all inventory and clients were bringing bicycles in for repair that had not been used for 20 years. Associated with increased bicycle riding activity was an increase in riding-related complaints that began to appear in the orthopedic office.

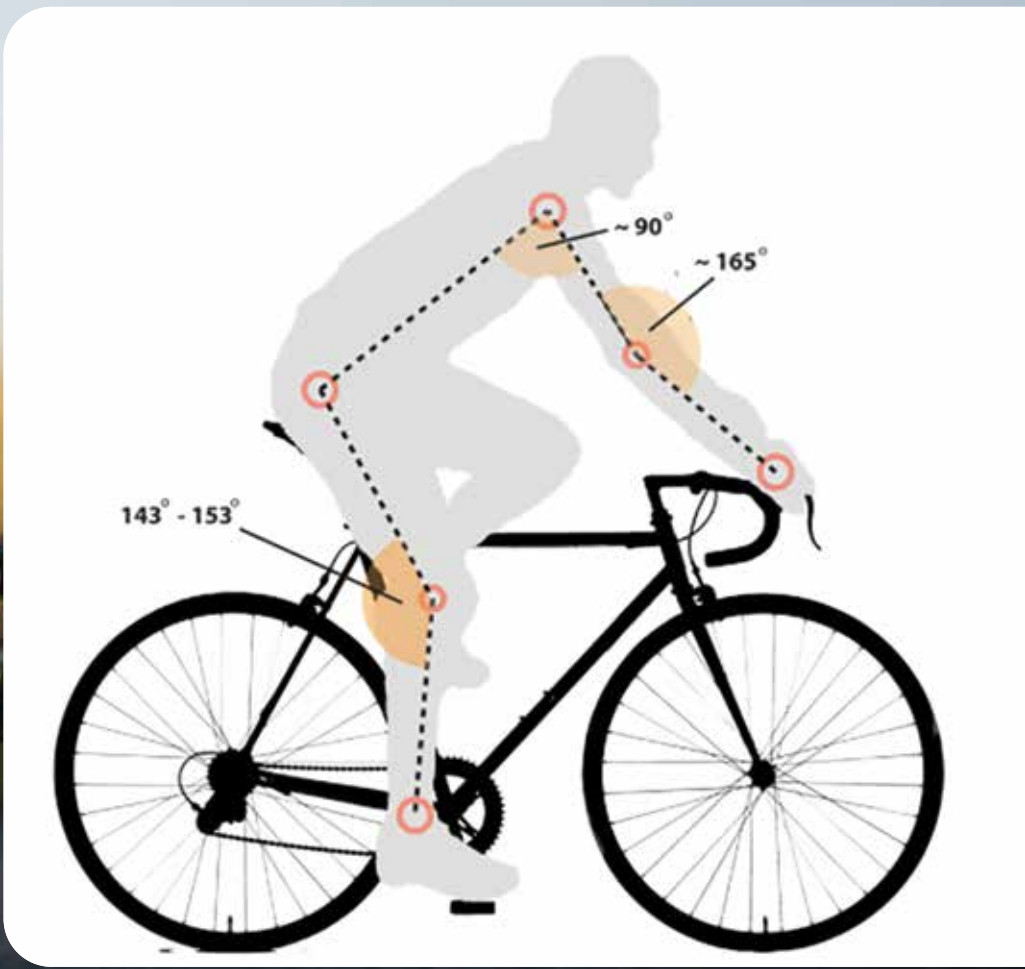
The common complaints associated with bicycle riding that present to the orthopedic surgeon's office include the following: Neck or cervical pain, wrist, hand and finger pain with numbness, low back or lumbar pain, pain associated with saddle impingement, foot pain complaints, and most commonly pain in the front of the knee joint. Most of the aforementioned complaints can be exacerbated by an ill-fitted bicycle and this short article intends to address some of the minor changes in bicycle fit that can have a profound impact on the comfort of bicycle riding as well as help to reduce the pain that may be associated with riding. Most of these adjustments are easily performed by the bicyclist rather than a technician and, even when there is a change in some of the components of the bicycle needed to make adjustments, they are inexpensive and readily obtainable at the bike shop.

The intention of these recommendations is directed toward road bicycles and stationary cycles, but may also apply to off-road mountain bikes.

Adjustment of the drive train section of the bicycle

The fitting of the bicycle starts at the drive train or rear of the bicycle. These adjustments will affect the adjustment of the cockpit or front end of the bicycle and therefore must be completed first. When one mounts the bicycle the first adjustment that is most obvious is that of the seat height. The seat height affects the ability to pedal with power and comfort. Improper seat adjustment can create both pains from the saddle and anterior knee pain. When one is sitting properly on the saddle the leg at the bottom of the paddle stroke should have a few degrees of flexion left at the knee. If the knee is fully straight and the cyclist is stretching to reach the bottom of the paddle stroke because the saddle is slightly too high, this will cause a rocking effect on the saddle. The back and forth rocking of the pelvis while sitting will create impingement and saddle pain will occur in short order. This discomfort will often cause the rider to give up quickly. If this seat height is adjusted too low, the knee remains in a high degree of flexion through most of the paddle stroke and this can lead to patellofemoral or front of the knee pain. These problems are easily rectified with the proper adjustment of seat height. Moving the seat height may take several trials with one-half-inch changes until the proper adjustment while riding is accomplished.

The second adjustment associated with the saddle is the forward or backward position of the saddle that is mounted on the seat post. This adjustment is often ignored but can make a profound impact in the reduction of knee pain. The saddle which is adjusted too far forward also contributes to the high flexion position of the knee while pedaling and can contribute to anterior knee pain in the same way as noted above with an improper seat height adjustment. In most cases, the cyclist has



adjusted the seat too far forward on the rails so that they can reach the handlebar. The proper adjustment technique starts by comfortably sitting on the saddle and having an assistant steady the cyclist. The rider then brings the paddles parallel to the ground and looks down the front edge of the forward knee. The rider should be able to see his or her foot. If the saddle is adjusted too far forward the cyclist will not see the forward foot. This may be the most important single adjustment often ignored by cyclists. The adjustment is very easy as the saddle is on a rail and can be easily adjusted forward or backward with a single loosening of the screw.

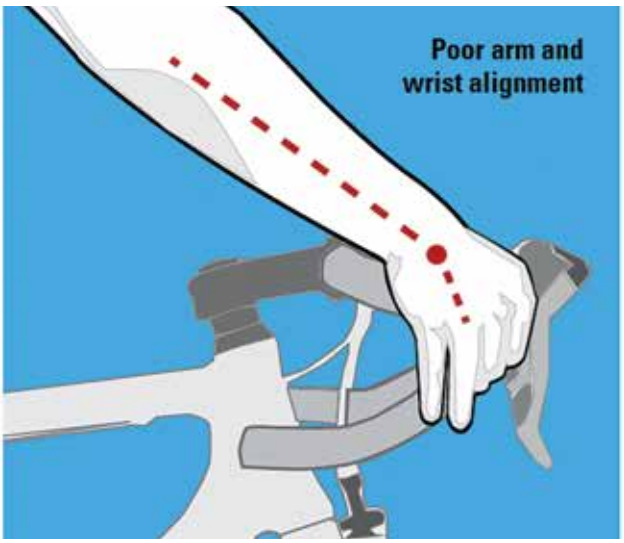
Foot pain is another problem often associated with improper adjustment of the bicycle. In most cases, the rider complains of pain on the ball of the foot after riding longer distances. This is caused by pressure transmitted from the paddle through the shoe onto the forefoot. The first and possibly the most important adjustment for forefoot pain is to purchase a properly fitted bicycle shoe. Bicycle shoes have a hard sole that distributes pressure from the paddle along the entire foot and therefore reduces this point pressure at the ball the foot.

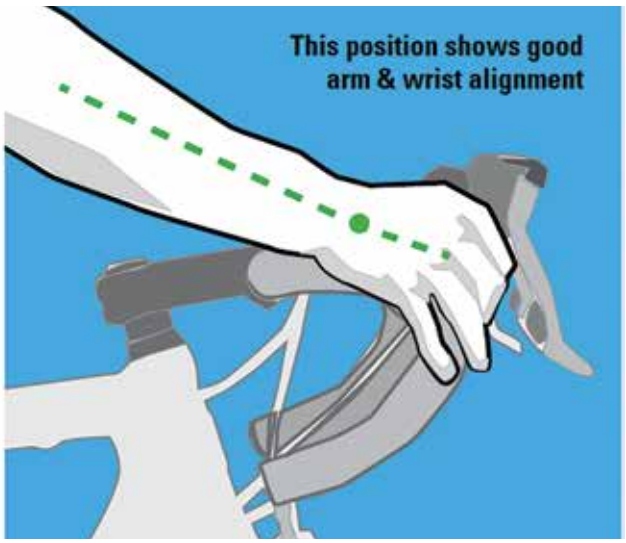
There are 2 types of bicycle shoes easily found in any bicycle shop. The recommendation for most casual riders is a mountain bike shoe. This shoe has lugs on the sole that recess the pedal cleat and allow a cyclist to get off the bike and walk comfortably. This is the shoe recommended for cyclists using standard flat pedals. A road bike shoe has the pedal cleat mounted directly on the sole of the shoe which can make walking more difficult and put the cyclist at risk of a fall. Both types of shoes alleviate the forefoot problem. The one adjustment of the bike shoe for cyclists using a clipless pedal is the position of the paddle cleat. The position should be set at the furthest position towards the heel. This will help move the pressure away from the ball the foot. There are additional adjustments of the pedal and shoe position that can be made but the assistance of a bike fitter is often necessary to accomplish this.

Before finishing the discussion of the adjustments of the drive train section of the bicycle we must cover the issue of saddle pain. If one is cycling with an ill-fitting saddle for any distance it is likely the rider will experience pain in the areas where the saddle contacts the "sit bone" or ischium of the pelvis. There are two steps to aid in the resolution of this problem. First is the purchase of bicycling shorts which have padding in the appropriate places to help reduce pressure sores on the saddle. The second and often more expensive choice for the rider is to change the saddle. Bicycle saddles are available in many shapes and can accommodate different individuals. There are male and female-specific saddles that differ based on the geometry of a gender-specific pelvis. A good bicycle shop will have a library of saddles that can be tested before the purchase of this relatively expensive but important component of the bicycle.

Adjustment of the cockpit or front end of the bicycle

Once the cyclist has properly adjusted the drive train section of the bicycle they can then work on adjusting the front, which is





referred to as the cockpit of the bike. This includes adjustment of the handlebar height, width, forward, and apposition. One of the most common complaints associated with bicycle riding is that of neck pain. This is particularly important in the older rider who may be extending the neck for long periods. This can irritate even mildly arthritic cervical spine joints. The extended position contributes to neck and upper shoulder pain, which can limit the amount of time a cyclist, spends riding.

Minor adjustments of the handlebar position can have a profound impact and minimize neck pain. The first adjustment of the handlebars is made when the cyclist is comfortably sitting on the saddle and reaching forward to grip the handlebar. The distance between the saddle and the handlebars is easily adjustable by the stem. The stem is the piece of the bicycle that holds the handlebars and attaches to the front fork of the bicycle. The stem can be adjusted for height and distance which is important for older cyclists. A standard stem can often put the rider into a stretched-out position to reach the handlebars. Changing the position of the handlebars to allow the cyclist to sit more upright will put less stress on the neck and lower back. The adjustment requires a shorter and more upright stem to thereby reduce the distance between the saddle and the handlebars. Changing the stem may require the assistance of the bike shop but is not very costly and very important for long-term comfort while riding.

Cyclists that ride longer distances often complain of hand and finger numbness. These symptoms are associated with compression of the median nerve. This important nerve passes on the palm side of the wrist as it enters the hand and fingers. When the cyclist holds the handlebars and creates pressure on the nerve it puts the nerve "to sleep" and causes a tingling feeling in the fingers. One of the simplest remedies is to buy a set of cycling gloves. There is padding at the heel of the glove which reduces the pressure on the nerve while riding. An additional, inexpensive solution, is to change the handlebar tape to a more padded version. There are gel pads that can be placed in strategic positions along the handlebars, underneath the bar tape, which can additionally reduce the pressure on the nerve.

An additional adjustment in the front end of the bicycle which has a great impact on the comfort while cycling is the position of the brake hoods. If the brake hoods are adjusted too far forward the cyclist must lean forward to reach the brake handles. This position creates additional strain on the hands, neck, and lower back. A simple rotation of the handlebars to bring the brake hoods to a more upright position and closer to the rider can reduce these complaints.

Bike riding is a great way to enjoy the outdoors as well as to improve your physical fitness and general well-being. Understanding how to make simple adjustments to your bike can help to minimize or eliminate potential problems that may cause discomfort during bike riding. If you don't feel comfortable adjusting your bike, we encourage you to seek assistance from a bike mechanic at your local biking store. At UOA, we encourage people to get out, be active and enjoy biking. We encourage you to keep your Life in Motion.

Scan to learn more about Mark S. Butler, MD

BY KENNETH G. SWAN, JR., MD

The Evolution of Casting

Throughout the past 50 years, we have seen a transformation in casting and fracture care. In the 1970s, the use of plaster of Paris casting material with cotton dressing underlayment was normal for fracture care. The application of plaster casts was messy and time-consuming. The casts tended to be heavy, to break and were very susceptible to water damage. In the 1980s use of fiberglass casting material began to replace plaster as the material that was used to make a cast. Fiberglass tended to be a little stronger, a bit lighter, and less messy to apply vs plaster. However, the early fiberglass casts utilized a heat lamp to help "cure" the fiberglass. Fiberglass casting material was originally only white, but over time, manufacturers came out with a selection of colors, which was often appealing to younger patients. Patients were still instructed not to get the fiberglass casts wet, but this was not necessarily because it would cause a breakdown of the material, rather it was the concerns with the under-casting material, and the propensity for skin breakdown that could occur with moisture. Both casting methods contributed to a good bit of odor that caused concern among many patients.

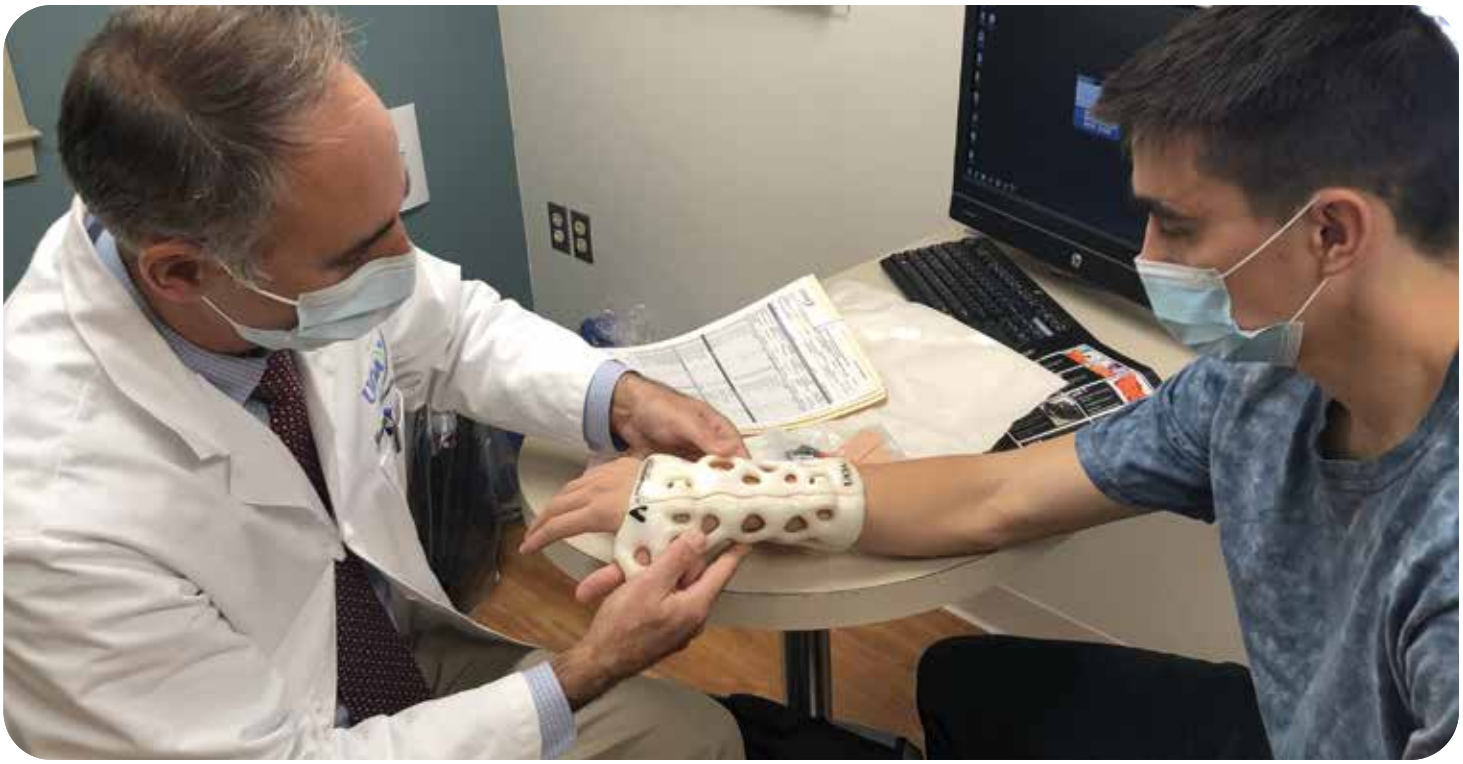
Plaster cast

In the 1990s, Gore-Tex®, made from polytetrafluoroethylene (PTFE), which is a material used in the construction of waterproof material frequently used in many breathable jackets and rain gear was utilized as an under-casting material. Gore-Tex® provided the same fracture stability vs cotton-based material, but it offered the patient the luxury to shower and swim in pools with their casts. This new material was particularly beneficial for athletes who often played while wearing casts which created perspiration, and moisture under the casting material. Skin breakdown was still a concern as often patients did not take the necessary time to allow the underlayment material time to drain and dry. An additional downside to the use of Gore-Tex® was the higher cost vs cotton-based underlayment.

Fiberglass cast

There were several studies done with pediatric patients looking at unplanned cast changes and it was found that 50% of those visits were because of wetness within the cast. The cost to replace a cast several times, and considering the office visit and physician time to apply each cast, illustrated how the Gore-Tex material saved costs because it reduced the unplanned visits for casting changes.

The downside to Gore-Tex® beyond the cost was that it could create some minor skin irritations in 11% of patients because of a moist or dirty under-cast environment. In general, the use of the Gore-Tex® material with good patient instructions to periodically rinse the cast did decrease unnecessary visits and excess re-casting.



3D printed splints

In 2021, we experience a new change to casting/splinting and that is with the use of 3D printed splints. The splint is waterproof, light, sturdy, and honey-combed in design which allows for maximal strength similar to a fiberglass cast while allowing for airflow. It is customized utilizing a simple scan of the injured site with an iPhone app, and measurement of 3 points for verification on sizing. The measurements and scan are sent to the manufacturing company, ActivArmor, and in 3-5 days, a customized splint is sent back to UOA for use with our patients. The splint is currently being used for a stable forearm, hand, finger, lower leg, and ankle applications. The splint is strong and durable which allows many patients to remain active, and to play sports while wearing the splint. The honeycomb design allows for airflow and water drainage which allows patients to swim, shower, or rinse off in the sink if the splint gets dirty. The splint is also removable which allows patients to initiate early motion, directly apply ice, or directly clean the extremity. Patients are no longer bothered with the odor or tormented by an itch you can't scratch that is frequently associated with a closed fiberglass cast. ActivArmor splints come in eleven different colors and the cost of the customized 3D splint is covered by most insurance carriers.

If you happen to suffer a fracture, talk to your physician to see if you are a candidate for a 3D customized splint for your fracture care.

Scan to learn more about Kenneth G. Swan, MD

UOA is the sole provider of ActivArmor 3D printed splints in the state of New Jersey

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We utilize PROMs (Patient Reported Outcome Measures) as a validated and tested tool used to quantify your recovery progress. PROMs are used to measure your current health and functional status prior to and after your surgery. You will **periodically receive communication via text or email from UOA/Caresense** to determine your progress throughout your recovery period. In addition to helping track and guide your recovery, this information helps us to continue to improve our clinical care through research.

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What Are PROMs?

Patient-reported outcomes are provided directly by the patient to the physician. These include:

- Symptoms
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- Patient-perceived health status

To facilitate this, we will ask you to provide us with a valid cell phone and email address. Completing the brief questionnaires in a timely fashion will help us track your progress and compare it to other patients who have also been treated with the same surgery.

Benefits of PROMs

- They improve the quality of patient care through research based on patient outcomes
- PROMs are a powerful tool used to inform your physician about your recovery and progress following surgery
- They are important to your physician as they can work with you to give you the best outcome possible, and will be recorded at standard timepoints to track your recovery

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Tragic Motorcycle accident:

UOA Docs Help Patient Put His Life Back Together Piece by Piece

Michael Barressi

Classic cars, Mustangs, dirt bikes, and motorcycles. Michael Barressi loved working on things with motors. Then one night in July of 2020, Michael's life changed forever as he was involved in a severe motorcycle accident in Hazlet. Michael was rushed to the Level I Trauma Center at Robert Wood Johnson Barnabas hospital in New Brunswick with multiple bodily injuries and numerous broken bones.

Once Michael was stabilized, our team of doctors at UOA began the process of piecing Michael back together. Drs. Sergei Pushilin and Carlos Sagebien, both trauma specialists at UOA, worked tirelessly to put Michael back together. Dr. Pushilin, initially on call the day Michael arrived, treated Michael with plate fixation of his right humerus fracture and external fixation of Michael's severe, compound fractures of his left humerus, forearm, wrist, and tibia. Care was then transferred to Dr. Sagebien, Chief of the Division of Orthopaedic Trauma at RWJ-Rutgers Medical School. Dr. Sagebien managed to salvage Michael's left leg with multiple operations, including a reconstruction of the tibia bone that was missing 15cm of bone during the accident. In addition to caring for the severity of Michael's left wrist and forearm injuries, Dr. Sagebien enlisted the help of Dr. Monica, an upper extremity specialist at UOA, to assist in the fixation of Michael's severe left arm injuries.

Michael spent two weeks in a coma and 45 days in the ICU during his stay at Robert Wood Johnson New Brunswick before being released to the Kessler rehabilitation center in West Orange, NJ. His long journey to recovery was not an easy one. However, thanks to the expert care of our specialists at UOA, Michael was walking virtually pain-free and using both of his arms less than a year after his accident.

Though Michael doesn't remember much of the early days in the hospital, he was quick to note that he has had over 190 procedures over the past year including 10 orthopaedic surgeries.

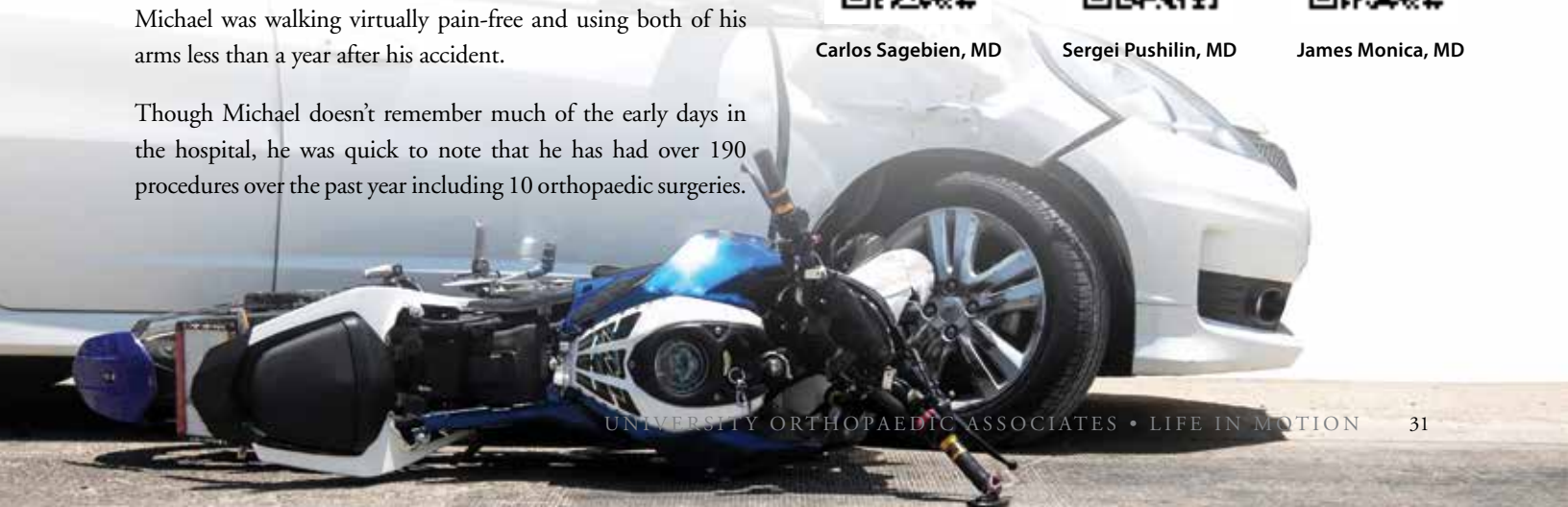
Before surgery

After surgery

"The care I received at RWJNB and UOA was outstanding. I am truly lucky that Dr. Sagebien and the team at UOA took care of me. He is excellent, funny, and has a great bedside manner. I think he did a pretty good job putting me back together! His staff was amazing." It truly is a miracle that Michael is alive, out of his wheelchair, and able to walk. Having leading specialists in every subspecialty of orthopaedics allows our team of doctors to maximize patient outcomes as highlighted by Michael's care. In fact, on November 1st, Michael returned to work at Buehler Dodge as a warranty specialist. As time goes by, Michael is getting better each day. He looks forward to continuing to return to normal and is eager to be back working on the engines he loves. Thanks to the talented team of doctors and staff at UOA, Michael is getting his "Life back in Motion".

Scan to learn more about

Carlos Sagebien, MD **Sergei Pushilin, MD** **James Monica, MD**



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BY JOSEPH ABADIR, PT, DPT

BY JESSICA DEFRANCESCO, PT, DPT

What Is Blood Flow Restriction Training (BFRT)?

Blood Flow Restriction Training (BFRT) is the use of a blood pressure cuff or tourniquet that intermittently occludes, or restricts venous blood flow to the upper or lower extremity while you exercise.

The device used in BFRT is similar to a blood pressure cuff that modulates blood flow to the extremity. It creates pressure to restrict a certain percentage of blood that flows to the extremity. Research has demonstrated that BFRT creates beneficial changes to both the extermity and the entire body, including:

- Improved strength
- Increased muscular hypertrophy
- Reduced atrophy
- Improved cardiovascular function

How Was BFRT Created?

BFRT originated in Japan during the 1960s, when Yoshiaki Sato fractured his ankle and injured the ligaments in his knee while on a ski trip. He was placed in a plaster cast and told he needed six months to heal.

Sato decided to take his rehabilitation a few steps farther by wrapping his thigh with different tubings and performing isometric exercises a few times a day. This prevented his muscles from atrophying and shortened his recovery to six weeks.

Following his full and speedy rehabilitation, Sato began looking into using BFRT as a way to rehabilitate other types of injuries and developed KAATSU training using this technique. Thanks to Sato's pioneering work, BFRT has been extensively researched and developed even more since its origin during the 1960s. It was brought to the United States around 2011 when the military began using it to rehabilitate veterans. Widely accepted protocols and FDA-approved devices that involve the use of BFRT continue to be implemented by health care professionals for rehabilitative purposes.

How Is BFRT Used?

BFRT has been shown effective at treating a variety of both non-operative and post-operative conditions. It is currently used to help patients, clients, and athletes throughout the entire rehab and performance spectrum.

Primary uses for BFRT include:

- Preparing for surgery
- Post-operative recovery and rehab
- Diminishing atrophy
- Improving aerobic capacity
- Improving overall muscle strength
- Increasing muscle size

While these changes typically happen when undergoing high-intensity exercise, patients who use BFRT are able to complete exercises at a lower-intensity or at 20 to 30 percent of a one-rep max. Patients who benefit from BFRT the most perform exercises using the BFRT system two to three times a week with the cuffs inflated for no longer than 20 minutes. Nearly any exercise can be incorporated with BFRT to improve strength or aerobic capacity.

What Is the Safest Way to Use BFRT?

BFRT should be performed only under the supervision of a licensed medical professional. It is a safe intervention and presents no increased risk of developing a blood clot when used properly. However, it's important to understand that not every person is a candidate for BFRT.

Individuals who have certain medical conditions—including any vascular compromise or history of clotting, uncontrolled hypertension or history of certain cancers—are not candidates for BFRT. Additionally, certain medications that affect the risk of clotting may preclude a patient from being an appropriate candidate.

Contact the University Orthopaedic Associates (UOA) Center for Rehabilitation and Sports Excellence if you have an orthopaedic injury and want to learn more about your treatment options—including BFRT. We can perform an evaluation and develop a customized treatment plan for you that can help you get back to your usual activities as quickly as possible.

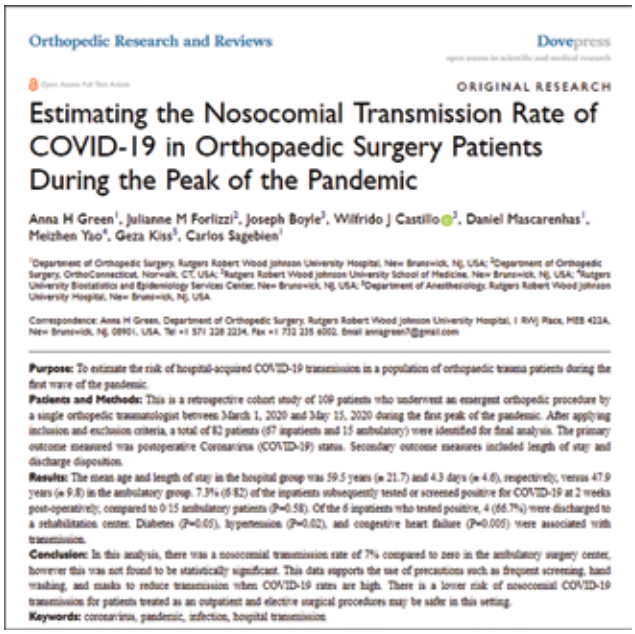
Scan to learn more about

Joseph Abadir, PT, DPT

Jessica DeFrancescos , PT, DPT

Congratulations Dr. Sagebien and Residents!!!

"Evaluation of Nosocomal Transmission Rate of COVID-19 Following Orthopedic Surgery" was a winner of the Eastern Orthopaedic Association **Ranawat resident award in 2021.** The award was given for the best research paper by a resident or fellow. It was presented as a podium presentation at EOA in 2021, and also at AAOS in 2022. The article was published in Orthopaedic Research and Reviews.



Orthopedic Research and Reviews — Dovepress

ORIGINAL RESEARCH

Estimating the Nosocomial Transmission Rate of COVID-19 in Orthopaedic Surgery Patients During the Peak of the Pandemic

Anna H Green[1], Julianne M Forlizzi[2], Joseph Boyle[3], Wilfrido J Castillo[3], Daniel Mascarenhas[1], Meizhen Yao[4], Geza Kiss[5], Carlos Sagebien[1]

[1]Department of Orthopedic Surgery, Rutgers Robert Wood Johnson University Hospital, New Brunswick, NJ, USA; [2]Department of Orthopedic Surgery, OrthoConnecticut, Norwalk, CT, USA; [3]Rutgers Robert Wood Johnson University School of Medicine, New Brunswick, NJ, USA; [4]Rutgers University Biostatistics and Epidemiology Services Center, New Brunswick, NJ, USA; [5]Department of Anesthesiology, Rutgers Robert Wood Johnson University Hospital, New Brunswick, NJ, USA

Correspondence: Anna H Green, Department of Orthopedic Surgery, Rutgers Robert Wood Johnson University Hospital, 1 RWJ Place, MEB 422A, New Brunswick, NJ, 08901, USA, Tel +1 571 228 2234, Fax +1 732 235 6002, Email annagreen7@gmail.com

Purpose: To estimate the risk of hospital-acquired COVID-19 transmission in a population of orthopaedic trauma patients during the first wave of the pandemic.

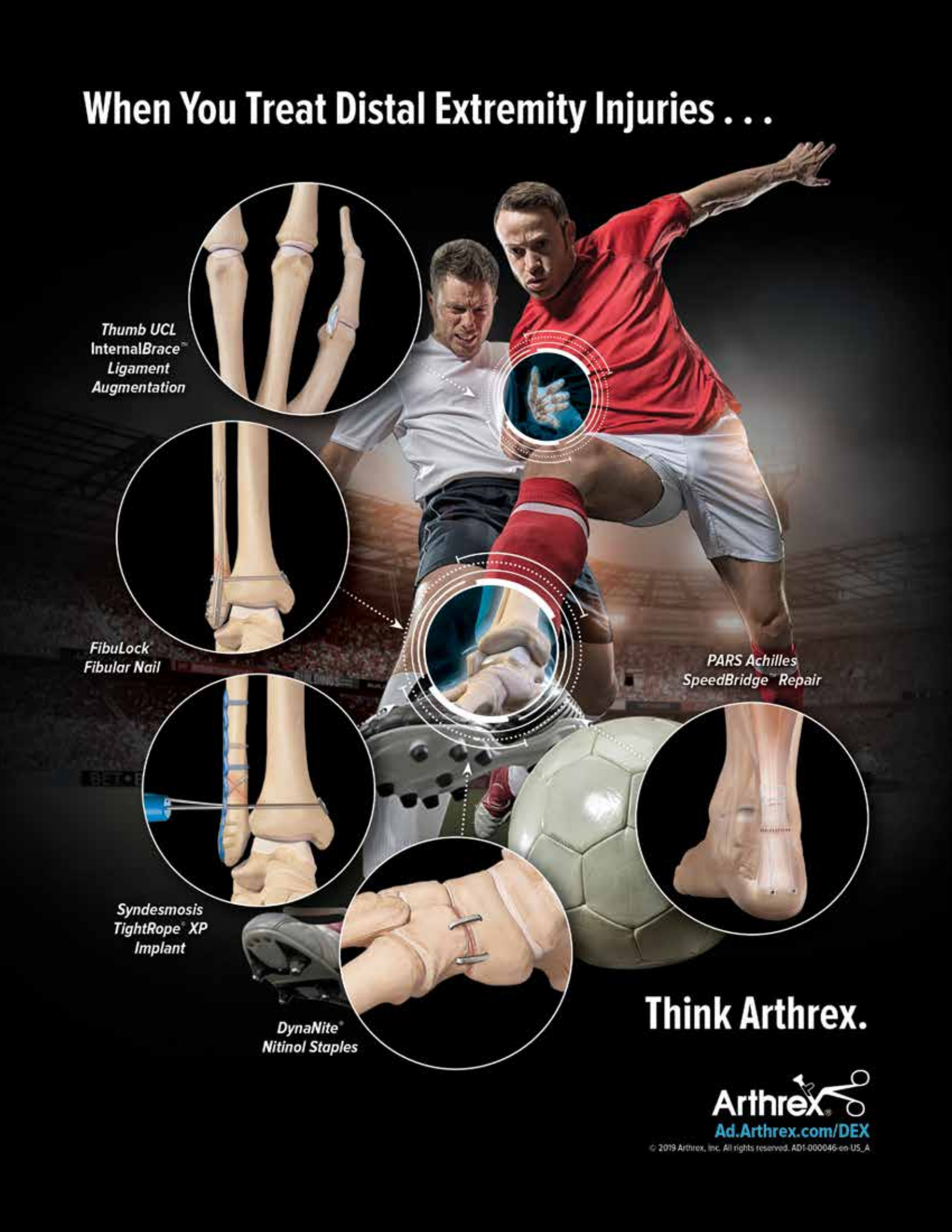
Patients and Methods: This is a retrospective cohort study of 109 patients who underwent an emergent orthopedic procedure by a single orthopedic traumatologist between March 1, 2020 and May 15, 2020 during the first peak of the pandemic. After applying inclusion and exclusion criteria, a total of 82 patients (67 inpatients and 15 ambulatory) were identified for final analysis. The primary outcome measured was postoperative Coronavirus (COVID-19) status. Secondary outcome measures included length of stay and discharge disposition.

Results: The mean age and length of stay in the hospital group was 59.5 years (± 21.7) and 4.3 days (± 4.6), respectively, versus 47.9 years (± 9.8) in the ambulatory group. 7.5% (5/82) of the inpatients subsequently tested or screened positive for COVID-19 at 2 weeks post-operatively, compared to 0/15 ambulatory patients (P=0.58). Of the 6 inpatients who tested positive, 4 (66.7%) were discharged to a rehabilitation center. Diabetes (P=0.03), hypertension (P=0.02), and congestive heart failure (P=0.005) were associated with transmission.

Conclusion: In this analysis, there was a nosocomial transmission rate of 7% compared to zero in the ambulatory surgery center, however this was not found to be statistically significant. This data supports the use of precautions such as frequent screening, hand washing, and masks to reduce transmission when COVID-19 rates are high. There is a lower risk of nosocomial COVID-19 transmission for patients treated as an outpatient and elective surgical procedures may be safer in this setting.

Keywords: coronavirus, pandemic, infection, hospital transmission

When You Treat Distal Extremity Injuries . . .



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BY CHARLES J. GATT, JR., MD

Friday Night Lights

25 years of covering high school football

I have always been a big fan of football. As a lifelong, diehard New York Giant fan, my fall Sundays have usually revolved around what time the Giants game was on. That certainly has been a journey of ups and downs. In 1995, I began my practice in orthopaedic sports medicine in Glendale, CA. Since I had completed a fellowship in sports medicine at The Cleveland Clinic Foundation, I was anxious to put my training to good use. After a few introductions, I was asked to provide coverage for the Crescenta Valley High School football games. So began my journey of Friday night football. Due to budget limitations, many schools in California did not have an athletic trainer. One of the coaches had some tape and ace wraps in a tool box. When players were injured, rather than a distracted coach treating them, I was able to do a sideline evaluation and determine if they were able to safely return to the game. I packed a bag of supplies from my office such as knee braces, ankle braces and slings so I would be better equipped to help out the players. The coaches and parents were certainly appreciative. And, I must say, standing outside on a clear Friday night in southern California, enjoying football was rather pleasant.

After two years, my family moved back to New Jersey and I joined University Orthopaedic Associates. I was offered and accepted the opportunity to provide coverage for Hillsborough High School. This was an exciting time to be around Hillsborough football. For the next several years, Hillsborough was always in the running for the Group IV state championship. In comparison to California, New Jersey high schools all had at least one athletic trainer. So, I entered into an environment

where the athletic trainer was always looking out for the well being of the student athletes and I had someone to work with. There was another big difference. Unlike California, Friday night weather was not guaranteed to be clear and pleasant. From September to late November, nights ranged from beautifully. to hot and humid, to cold and rainy or snowy and could be downright nasty. However, one thing didn't change – the enthusiasm of the players, coaches, parents and community. Since Hillsborough was a perennial powerhouse, the stands were completely full for every game and the fans were lined up three deep around the track.

As the physician on the sidelines, I certainly enjoyed the excitement of the game. However, I was there to care for the athletes and I took that responsibility very seriously. I watched play closely for any signs that someone had been injured. Players would run off the field with injuries and I was able to examine them on the sidelines and determine if it was safe for them to return to play. This included all kinds of bumps and bruises, cuts, sprains, and strains. It also included concussion evaluations. I remember thinking, "If this was my son, would I let him back in the game?" And, to that end, in a minute or two, a worried parent would be at the fence asking if their son was OK.

In one of the most exciting games I ever watched, Hillsborough won on the last play, the crowd erupted in joy and people were running all over the field. I scanned the field and saw one of the players bent over at the 40 yard line and he wasn't celebrating. I ran over to check him and he was in significant discomfort. I was concerned he had sustained a serious abdominal injury. The athletic trainer found his parents and I told them they should take him to the emergency room right away. It turns out he had a "fractured kidney" and lost a lot of blood. Fortunately, his kidney did not have to be removed and he made a full recovery.

From an orthopaedic standpoint, I have managed many musculoskeletal injuries on the field and on the sidelines. I have put dislocated shoulders, elbows, ankles and even a hip back into place. I put an opposing player's finger back into place and he returned to the game and ended up being a key player for the team that won that night.

In 2008, my oldest son joined the Montgomery High School football team. Fortunately, that same year, Montgomery needed a physician to cover their games. Interestingly, Montgomery and Hillsborough are neighboring towns and sports rivals. It was difficult to end my relationship with Hillsborough but I knew my place was in Montgomery. For the next four years, I was on the sidelines for every Montgomery football game - home and away. Montgomery was a relatively new football program and did not have the storied success of Hillsborough. However, the enthusiasm of the community was tremendous. As much as I enjoyed the excitement of the games, I knew I was there to take care of players. This time, the players were the friends of my son and the players parents were my friends. For me, that added a bit of pressure to the situation. However, I was reassured one time when a parent told me how glad they were that I was on the sideline while their son was playing football.

My son has since graduated and I continue to cover Montgomery high school games. As a sports medicine fellow, I was on the sidelines for Cleveland Browns football games. Now, on Saturdays, I am on the sidelines of Rutgers football games. Both the professional and collegiate level coverage have their own experiences. However, there will always be a special place in my heart for high school football. I have worked with and learned from some outstanding athletic trainers. Their dedication and commitment to the players and the community often goes unrecognized but is truly admirable. I have seen the positive impact good coaches can have on the lives of young boys transitioning into men. I have witnessed the sense of hard work, camaraderie and teamwork football instills in these young athletes. I am grateful the schools, coaches, parents, and players trust me to care for their teams. I will always try to give back with a watchful eye on the sidelines on fall Friday nights.

Scan to learn more about Charles J. Gatt, Jr., MD

UOA Docs **KNOW** Sports Medicine

"You dream. You plan. You reach. There will be obstacles. There will be doubters. There will be mistakes. But with hard work, with belief, with confidence and trust in yourself and those around you, there are no limits."

- Michael Phelps

Athletes are a unique breed that often requires a particular perspective to totally understand them and what they accomplish. Many athletes are goal-oriented, highly focused, and working towards a record, an accomplishment, or a championship. When an injury happens, you want to turn to a caregiver to help you get back to your activity. You want a professional who understands what it's like to be an athlete, appreciates the athlete psyche and wants to help you minimize your time away from sports. Understanding and expertise matters when you are trying to return to your sport and accomplish your goals.

At UOA, we understand athletes because many were successful athletes on the high school and collegiate levels. We know the dreams of athletes and the demands of sports. We recognize the effort, motivation, and drive to be successful because many of us have been successful athletes. Many of us have played in the big game, won the race, made the winning shot, or become the champion. We have spent time in the athletic trainer's room and worked hard to rehabilitate and get back to our sports.

We've trained.
We've pushed.
We've been hurt.
We've battled.

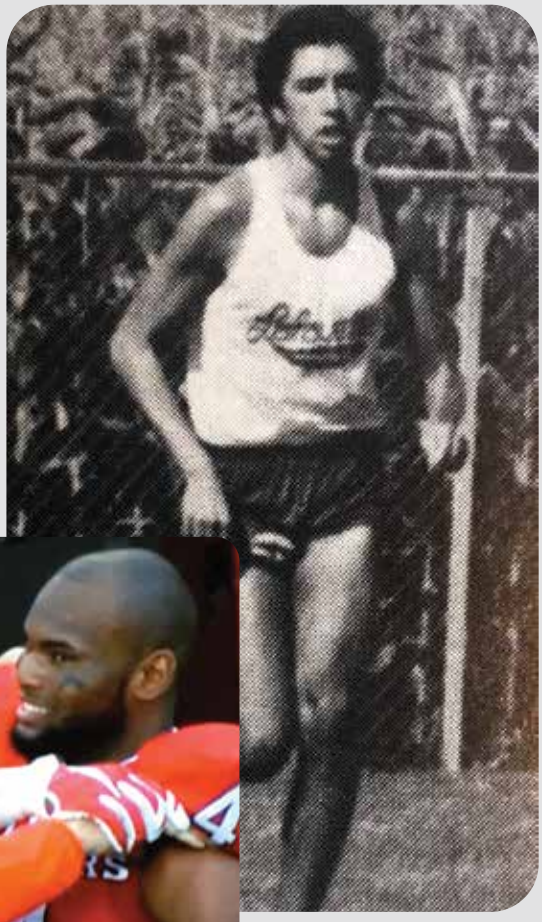
We are here for you.

We get it! Expertise Matters!

It's unfortunate, but injuries do happen. They can derail dreams and athletic desires, but it is reassuring that there is a place to turn as many of the doctors at UOA were once athletes. They understand the importance of treating a competitive athlete. Whether you are a high school, collegiate, international, professional, or recreational athlete, we are here to help you keep your life in motion!

If you are looking for high-quality sports medicine care, you have come to the right place.

Dr. Mark Butler – was a successful swimmer who held two records at Lafayette College.



Dr. Ryan Coyle – was an All-Ivy League punter at Princeton University.

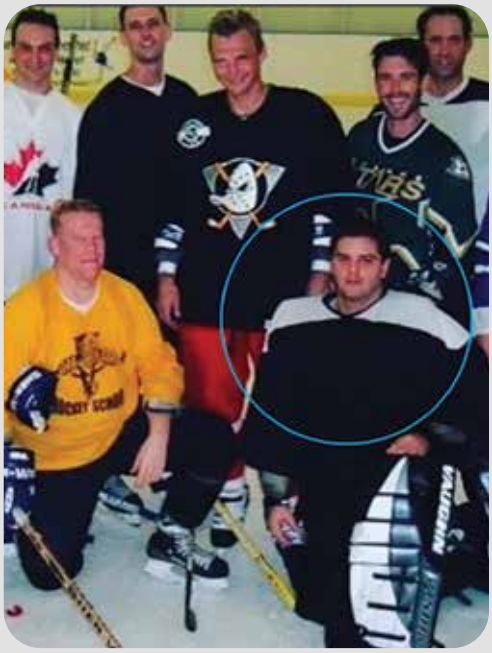
Dr. Charles J. Gatt, Jr. - was a highly successful runner at Lafayette College. He serves as the orthopaedic consult at Rutgers University and Montgomery High school.

We want to be a part of your team.

Dr. Jeffrey R. Bechler – played second base on the baseball team at Dartmouth College. He cares for the athletes at Princeton University.

Dr. Jamie Monica – Was a quarterback at Johns Hopkins University. He cares for the athletes at Princeton University and Hillsborough High School.

Dr. Mathew McDonnell – was a successful swimmer at TCNJ



Dr. Christopher Doumas – was a soccer, baseball and hockey player in high school and college.

Dr. Carlos Sagebien – was an Ice Hockey goalie and won a state championship. Played baseball and hockey at Hamilton College.

Dr. David Harwood – played football at Princeton University.

Dr. Kenneth G. Swan – played football, wrestled and played lacrosse in HS and he was a wide receiver at Cornell on an Ivy League Championship team. He serves as the team physician for Woodbridge Twp School District and Perth Amboy High school.

When you couple an understanding of being an athlete with medical expertise, you have the perfect combination to provide the highest level of sports medicine care.

Dr. Patrick S. Buckley – Was a successful football and basketball player in high school. He now serves as a doctor for US Ski and Snowboarding as well as the team physician for Neptune High school.

Dr. Timothy Leddy – played ice hockey as a defenseman in high school. He serves as the team physician at the Lawrenceville School.

Dr. Chris Beiro – was a successful gymnast in high school. He serves as the team physician for Sayreville High School.

Dr. Justin Fleming – was a guard on the Widner University basketball team.

Dr. David Polonet – was a wrestler at Stanford University.

Dr. Robert Pannullo – was a middle infielder for the baseball team at Upsala College.

Dr. Sergei Pushilin – was a swimmer while attending Brooklyn College.

BY PRASHANT BAKHRU, M.D.
PRINCETON RADIOLOGY

Musculoskeletal Disorders (MSDs)

Musculoskeletal disorders (MSDs) affect muscles, nerves, blood vessels, ligaments, and tendons. Workers across all industries and occupations are exposed to risk factors such as lifting heavy objects, bending, reaching overhead, and pulling or pushing heavy loads repetitively. Workplace ergonomics can be thought of as fitting a job to a person in order to reduce the number and lessen the severity of MSDs.

Work-related MSDs are the among the most frequently reported causes of lost or restricted work time. This has gained increasing attention with the Covid-19 pandemic displacing office workers from ergonomic office workstations. Office employees are spending more time at home which may trend post pandemic. For over a year millions of workers find themselves working on kitchen counters, sofas, and even their bed. Increasing reliance on laptops and cell phones particularly without the appropriate ergonomics in mind is causing a pandemic of pain involving the neck, shoulders, back, and upper extremities.

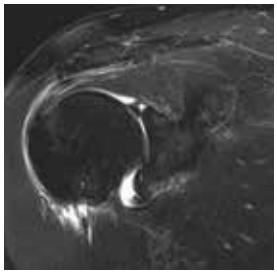


Figure 1

MSDs can be be definitely diagnosed with magnetic resonance imaging (MRI). At Princeton Radiology we frequently diagnose workplace MSDs such as tendinitis of the upper extremities. For example a forward hunched posture can cause the rotator cuff tendons become pinched. Over time this leads to tendinitis (figure 1) and eventually tear.

With laptops and phones the tendency is to look down and bend the neck putting us in a chronic forward head position. This places increased pressure on discs and joints of the spine. As such neck and lower back pain is a frequent symptom that is exacerbated by poor ergonomics. It can be attributed a number of etiologies requiring MRI for a specific diagnoses. Sitting also places stress on spinal discs which when combined with poor ergonomics leads to accelerated spinal disc degeneration. The spinal discs can eventually herniate leading to spinal cord and nerve root impingement (figures 2 and 3).

Figure 2

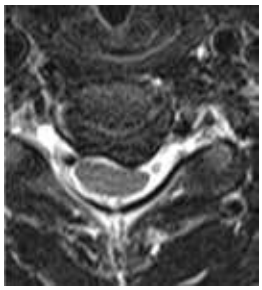
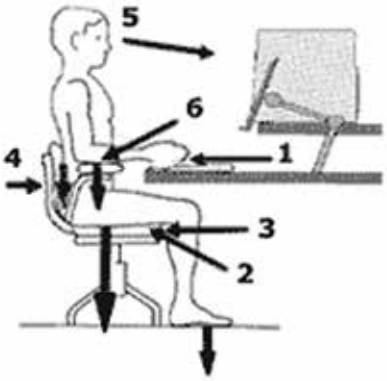


Figure 3

With this in mind it is important to account for the position of the chair, desk, monitor, and posture while sitting. Workers should strive for the neutral posture position.



1. Sit as close to your desk to keep you upper arms parallel to your spine.
2. Ensure that you can easily slide a finger under the thigh at the leading edge of the chair. If too tight consider adding a footrest to raise your feet. If there is too much space raise the chair and desk if possible.
3. There should be adequate space between the front of the chair and calf.
4. Keep your back pressed against the chair ideally with slight arch in your lower back. A small cushion may. Avoid slouching forward.
5. Head should be neutral with eyes gazed at the center of the screen. Adjust the monitor as necessary.
6. Adjust the armrest so that there is slight lift on the arms. This takes strain off the shoulders and neck.

In addition the body needs movement even if you are in the ideal ergonomic sitting position. Adding a standing workstation or simply getting up for a quick stretch every 30 minutes or so is optimal. These small steps in prevention are the key. When symptoms do arise imaging can offer a specific diagnosis for a tailored treatment plant. At Princeton Radiology we offer the full breadth of advanced orthopedic imaging. It is our privilege to help support the active lifestyle of patients in our community.

William Baione, MD

Dr. Baione is board certified in orthopaedic surgery. He obtained his medical degree from the Weill Cornell Medical College at Cornell University and his bachelor's and master's degrees in biomedical engineering from the University of Miami. He completed his internship and residency in orthopaedic surgery at Rutgers Robert Wood Johnson Medical School followed by a fellowship in adult reconstruction and joint replacement at the Florida Orthopaedic Institute.

ACCOMPLISHMENTS

- Subspecialty certified in adult reconstruction and joint replacement
- Member of the American Academy of Orthopedic Surgeons (AAOS)
- Member of the American Association of Hip and Knee Surgeons (AAHKS)
- Member of the International Congress for Joint Reconstruction
- Presented over a dozen professional research and grand rounds presentations on various orthopaedic surgery topics
- Academic appointment as a Clinical Instructor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Conducted clinical, basic science and biomechanics research at numerous institutions including the Department of Biomechanics, Hospital for Special Surgery, Max Biedermann Institute for Biomechanics Research at Mount Sinai Medical Center, Miami Beach and Ryder Trauma Center, Jackson Memorial Hospital
- Outstanding Master's Student Award, University of Miami Dept. of Biomedical Engineering
- Honors Graduate, University of Miami
- Society of Professional Hispanic Engineers
- Inducted into Tau Beta Pi Engineering Honor Society
- Inducted into Alpha Eta Mu Beta Biomedical Engineering Honor Society
- Fluent in Spanish

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- Management of Periprosthetic Joint Infections
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- Hackensack Meridian Jersey Shore University Medical Center
- Hackensack Meridian Old Bridge Medical Center
- Hackensack Meridian Raritan Bay Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

Jeffrey R. Bechler, MD

Dr. Bechler is board certified in orthopaedic surgery. He earned his medical degree from New York Medical College after earning his undergraduate degree from Dartmouth College. He completed his internship and residency at Rutgers New Jersey Medical School (formerly UMDNJ), and a fellowship in sports medicine at the Kerlan Jobe Orthopaedic Clinic in Los Angeles.

ACCOMPLISHMENTS

- Subspecialty certification in sports medicine
- Head orthopaedic consultant for Princeton University Athletics
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Published author in peer-reviewed journals
- Speaker at numerous regional and national meeings
- Elected by his peers for inclusion in Best Doctors in America®

HOSPITAL AFFILIATIONS

- CARES Surgicenter
- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

Cris Beiro, MD

Dr. Cris Beiro is a board certified orthopaedic surgeon. Prior to joining UOA, Dr. Beiro was a former Navy corpsman and co-founder of Garden State Bone and Joint. He is a clinical assistant professor of orthopaedic surgery at Rutgers New Jersey Medical School (formerly UMDNJ).

Dr. Beiro received his medical degree from Rutgers New Jersey Medical School, where he also completed his internship and residency. He completed his fellowship in sports medicine at Union Memorial Hospital in Baltimore, and acted as assistant team physician to professional and college teams, including the Baltimore Ravens NFL team and the Washington Nationals MLB team.

ACCOMPLISHMENTS:

- Member of the American Academy of Orthopaedic Surgeons
- Member of the American Orthopaedic Society for Sports Medicine
- Member of The Arthroscopy Association of North America
- Orthopaedic Administrative Chief Resident, Rutgers New Jersey Medical School, Newark, NJ
- Department of Orthopaedics Resident Teaching Award, Rutgers New Jersey Medical School, Newark, NJ
- Deans Honor List - Cornell University

HIGH SCHOOL AFFILIATIONS:

- Sayreville High School

HOSPITAL AFFILIATIONS:

- Hackensack Meridian JFK University Medical Center
- Hackensack Meridian Old Bridge Medical Center
- Hackensack Meridian Raritan Bay Medical Center
- Metropolitan Surgical Institute (MSI)
- University Center for Ambulatory Surgery (UCAS)

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Patrick S. Buckley, MD

Dr. Patrick S. Buckley is a board certified, fellowship trained orthopaedic surgeon. He is a sports medicine specialist with advanced training in the treatment of knee, shoulder and hip injuries. He graduated cum laude from Villanova University. Dr. Buckley obtained his medical degree from Sidney Kimmel Medical College at Thomas Jefferson University in Philadelphia, Pennsylvania. He completed his residency in orthopaedic surgery at the Rothman Institute at Thomas Jefferson University Hospital in Philadelphia, Pennsylvania followed by a fellowship in sports medicine at The Steadman Clinic and the Steadman Philippon Research Institute in Vail, Colorado.

Dr. Buckley is a member of the U.S. Olympic Ski and Snowboard physician pool and travels annually to provide medical care for the U.S. Moguls team. He is also the head team physician for Neptune High School and an assistant league physician for the Premier Lacrosse League.

ACCOMPLISHMENTS

- Academic appointment as a Clinical Assistant Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Member of The American Academy of Orthopaedic Surgery (AAOS)
- Member of The American Orthopaedic Society for Sports Medicine (AOSSM)
- Member of The American Shoulder and Elbow Society (ASES)
- Provided team coverage for Villanova University, the Philadelphia Phillies and the Philadelphia Marathon
- During his fellowship training, Dr. Buckley treated professional athletes from the NBA, MLB, NFL, NHL, MLS and professional ballet companies
- Traveled to Japan and New Zealand to provide team coverage for the U.S. Olympic Ski and Snowboard team athletes
- Clinical Fellow Award for Outstanding Basic Science Research
- Outstanding Fellow Teaching Award
- Everett J. Gordon Chief Resident Award
- Medical Student Teaching Award
- Mark Chilton Compassion Award
- Selected as Graduation Speaker by medical school classmates
- Alpha Omega Alpha Honor Society

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

Mark S. Butler, MD

Dr. Butler is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree and master's degrees from Lafayette College and Lehigh University. He completed his residency in orthopaedic surgery at Rutgers New Jersey Medical School. Dr. Butler completed a fellowship at the Maryland Institute for Emergency Medical Services Systems specializing in traumatology and foot and ankle surgery.

ACCOMPLISHMENTS

- Subspecialty certified in traumatology and surgery of the foot and ankle
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- New Jersey Task Force One (NJ-TF1) volunteer
- Published author in peer-reviewed journals
- Regional and national lecturer on orthopaedics
- Elected by his peers for inclusion in Best Doctors in America®
- Named to the Castle Connelly Top Doctors list
- Named to the New Jersey Monthly Jersey Choice Top Doctors list

HOSPITAL AFFILIATIONS

- CARES Surgicenter
- Saint Peter's University Hospital
- Robert Wood Johnson University Hospital New Brunswick
- University Center for Ambulatory Surgery (UCAS)

Gino Chiappetta, MD

Dr. Chiappetta is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree from Rutgers University. He completed his internship and residency at the University of Miami Leonard M. Miller School of Medicine, Jackson Memorial Hospital. Following his residency, he completed a fellowship at The Spine Center at The Mount Sinai Hospital.

ACCOMPLISHMENTS

- Subspecialty certified in surgery of the spine and orthopedic trauma
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Inducted into the Alpha Omega Alpha Honor Medical Society
- Advanced training in robotic spine surgery utilizing the Mazor Renaissance Robotic® system
- Advanced training in cervical and lumbar disc replacement surgery
- Voted Vitals Patients' Choice Award
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Named to the Select Surgeons Bone & Joint list

HOSPITAL AFFILIATIONS

- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

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Ryan Coyle, MD

Dr. Ryan Coyle is a board certified orthopaedic surgeon with a specialty in the hand and upper extremity. He received his medical degree from Columbia University after earning his undergraduate degree from Princeton University. He completed his internship and residency at Lenox Hill Hospital in New York. He completed a fellowship inhand and upper extremity surgery at NYU Langone Orthopedic Hospital, formerly known as Hospital for Joint Diseases, part of one of the top orthopaedic hospitals in the country.

Dr. Coyle was a four-year punter on the Princeton University varsity football team, where he was named to the Walter Camp Football Foundation All-American Team, the nation's oldest All-America squad.

CLINICAL INTERESTS

- Arthritis of the upper extremity
- Carpal tunnel syndrome
- De Quervain's tenosynovitis
- Dupuytren's contracture
- Fractures of the upper extremity
- Hand trauma
- Nerve repair
- Nerve entrapments
- Orthopaedic trauma
- Rheumatoid arthritis
- Shoulder arthroscopy
- Shoulder replacement
- Tendon repair
- Trigger finger
- Wrist arthroscopy

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Hackensack Meridian Old Bridge Medical Center
- Hackensack Meridian Raritan Bay Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

Christopher Doumas, MD

Dr. Doumas is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree from the College of William & Mary. He completed his internship and residency at the University of Miami Leonard M. Miller School of Medicine, Jackson Memorial Hospital. Following his residency, he did a fellowship in hand and upper extremity surgery at the Hospital of the University of Pennsylvania.

ACCOMPLISHMENTS

- Subspecialty certified in surgery of the hand and upper extremity
- Director of Hand Surgery at Jersey Shore University Medical Center
- Academic appointment as a Clinical Assistant Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Volunteered as a surgeon in Haiti following 2010 earthquake
- Nurse's Choice Physician of the Year at Jersey Shore University Medical Center
- Co-author of the orthopaedic textbook, Operative Techniques in Orthopaedic Surgery
- Founder and President of LibraryOfMedicine.com
- Inducted into the Alpha Omega Alpha Honor Medical Society
- Fellow of the American Academy of Orthopaedic Surgeons (AAOS)
- Member of the American Society for Surgery of the Hand (ASSH)
- Reviews scientific articles for publication in several prominent orthopedic journals
- Named to the Castle Connelly Top Doctors list
- Named to the Select Surgeons Bone & Joint list

CLINICAL INTERESTS

- Joint replacements of the shoulder, elbow, wrist and hand
- Arthroscopy of the shoulder, wrist and hand
- Nerve decompression
- Nerve transfers
- Performs Tenex for various tendon disorders including lateral epicondylitis

HOSPITAL AFFILIATIONS

- Central Jersey Surgery Center (CJSC)
- Hackensack Meridian Jersey Shore University Medical Center
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

UOA
University Orthopaedic Associates

Justin Fleming, DPM, FACFAS

Dr. Fleming is a foot and ankle surgeon board certified by the American Board of Foot and Ankle Surgeons (ABFAS). He obtained his medical degree from Temple University and his undergraduate degree from Widener University in Chester, Pennsylvania. He received extensive training in foot and ankle reconstruction for three years in the Emory Healthcare System where he served as the chief resident. He gained additional training in fracture management with the U.S. Army at Fort Benning as well as in Europe.

ACCOMPLISHMENTS:

- Board certified in reconstructive rearfoot and ankle surgery
- Board certified in foot surgery
- Fellow, American Board of Foot and Ankle Surgery
- Diplomate, American College of Foot and Ankle Surgeons
- Extensive continuing education in external fixator, ankle arthroscopy and ankle arthroplasty
- Extensive physician training, instructed nearly 50 courses to date
- Given over 100 lectures to date, both nationally and internationally
- Faculty member, The Podiatry Institute
- Faculty member, American Academy of Foot and Ankle Osteosynthesis (AAFAO)
- Humanitarian work in Guatemala with Healing the Children medical mission
- Two-time Teaching Physician of the Year Award Aria–Jefferson Health Valedictorian, Temple University School of Medicine

HOSPITAL AFFILIATIONS:

- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

Charles J. Gatt, Jr., MD

Dr. Gatt is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree from Lafayette College. He completed an internship and his residency at Rutgers New Jersey Medical School. Following his residency, he completed a fellowship specializing in orthopaedic sports medicine at the Cleveland Clinic Foundation.

ACCOMPLISHMENTS

- Subspecialty certified in orthopaedic sports medicine
- Orthopaedic Consultant and Team Physician at Rutgers University
- Head Orthopaedic Consultant for Rider University Athletics, 1997–2020
- Chairman & Program Director of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Program Director of the Limb and Salvage Program at Armed Forces Institute of Regenerative Medicine (AFIRM)
- Published author in peer-reviewed journals
- Regional and national lecturer on orthopaedics
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Patients' Choice Award recipient
- Elected by his peers for inclusion in Best Doctors in America®
- Patients' Choice On-Time Physician recognition
- 2020 Edward J. III Excellence in Medicine Award
- 2021 winner of Special Award for Innovation by the EJI Excellence in Medicine Foundation

HOSPITAL AFFILIATIONS

- CARES Surgicenter
- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

David A. Harwood, MD

Dr. Harwood is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree from Princeton University. He completed an internship at the University of California at San Francisco (UCSF) and residency at Rutgers New Jersey Medical School. Following his residency, he completed a fellowship specializing in joint replacement and arthritis surgery at the Cleveland Clinic Foundation. He is involved on an ongoing basis with clinical trials for patients with degenerative knee diseases.

ACCOMPLISHMENTS

- Subspecialty in adult reconstruction and joint replacement
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Elected by his peers for inclusion in Best Doctors in America®
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Member of the American Academy of Orthopedic Surgeons (AAOS)
- Member of the American Association of Hip and Knee Surgeons (AAHKS)
- Published author in peer-reviewed journals
- Conducted FDA 2014 study to investigate the efficacy and safety of a new total hip replacement construction
- Speaker at regional, national and international scientific meetings

HOSPITAL AFFILIATIONS

- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

Stephen Kayiaros, MD

Dr. Kayiaros is board certified in orthopaedic surgery. He obtained his medical degree from the Rutgers New Jersey Medical School (formerly UMDNJ) and his undergraduate degree from Johns Hopkins University. He completed his internship and residency in orthopaedic surgery as well as a fellowship in orthopaedic trauma at Warren Alpert School of Medicine at Brown University, followed by a fellowship in adult reconstruction and joint replacement at the Hospital for Special Surgery in New York.

ACCOMPLISHMENTS

- Subspecialty in adult reconstruction and joint replacement and orthopaedic trauma
- 2015 Volunteer Faculty Award recipient, Robert Wood Johnson Medical School
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Named to the Select Surgeons Bone & Joint list
- Member of the American Academy of Orthopaedic Surgeons (AAOS)
- Member of the American Association of Hip and Knee Surgeons (AAHKS)
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Senior Clinical Associate and Clinical Instructor, Department of Orthopaedic Surgery, Weill Cornell Medical College, Cornell University; Hospital for Special Surgery and Department of Orthopaedic Surgery; Warren Alpert School of Medicine, Brown University
- Resident of the Year, Department of Orthopaedics, Warren Alpert School of Medicine of Brown University
- Inducted into the Alpha Omega Alpha Honor Medical Society
- Excellence in Pathology, Robert Wood Johnson Medical School
- Honors Graduate, Johns Hopkins University
- Professional lecturer on orthopaedic surgery
- Fluent in Greek, working knowledge of French

HOSPITAL AFFILIATIONS

- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

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Timothy P. Leddy, MD

Dr. Leddy is board certified in orthopaedic surgery. He obtained his medical degree from Sidney Kimmel Medical College - Thomas Jefferson University after earning his undergraduate degree from Lehigh University. He completed an internship and his residency at Rutgers New Jersey Medical School (formerly UMDNJ). Dr. Leddy then completed a fellowship in surgery of the hand and upper extremity at the Mayo Clinic.

ACCOMPLISHMENTS

- Subspecialty certified in hand and upper extremity surgery
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Health Volunteers Overseas (HVO) Site Director 2005—present
- Reviewer for *Journal of the American Academy of Orthopaedic Surgeons*
- Published author in peer-reviewed journals
- Regional and national lecturer on orthopaedics
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Named to the Select Surgeons Bone & Joint list

HOSPITAL AFFILIATIONS

- Children's Specialized Hospital
- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

Michael T. Lu, MD

Dr. Michael Lu is a board certified orthopaedic surgeon. Before joining University Orthopaedic Associates, Dr. Lu co-founded Garden State Bone and Joint in Woodbridge. He is a clinical assistant professor of orthopaedic surgery at Rutgers New Jersey Medical School (formerly UMDNJ).

Dr. Lu earned his medical degree from Washington University School of Medicine in St. Louis, and completed both an internship and residency at Rutgers New Jersey Medical School. He then completed a fellowship in shoulder and elbow surgery at the University of Pennsylvania.

ACCOMPLISHMENTS:

- Member of the American Academy of Orthopaedic Surgeons
- Member of the Arthroscopy Association of North America
- Member of the Mid-Atlantic Shoulder and Elbow Society
- Alfred F. Behrens Outstanding Resident Award
- Frederick F. Buechel, Sr. Award for Resident Research
- Outstanding Resident Research Award, NJMS Department of Orthopaedics
- Starr Foundation Scholar
- Dean's List at Temple University

HOSPITAL AFFILIATIONS:

- Advanced Spine Surgery Center (ASSC)
- Hackensack Meridian JFK University Medical Center
- Hackensack Meridian Old Bridge Medical Center
- Hackensack Meridian Raritan Bay Medical Center
- Metropolitan Surgical Institute (MSI)
- University Center for Ambulatory Surgery (UCAS)

Matthew McDonnell, MD

Dr. McDonnell is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after completing his undergraduate degree at The College of New Jersey. He then completed his internship and residency training in orthopaedic surgery at Brown University and Rhode Island Hospital in Providence, RI. Dr. McDonnell completed a fellowship in orthopaedic trauma at Brown University followed by a fellowship in spine surgery at Rothman Institute at Thomas Jefferson University Hospital in Philadelphia, Pennsylvania.

ACCOMPLISHMENTS

- Subspecialty certified in surgery of the spine
- Fellowship trained in spine surgery and orthopaedic trauma surgery
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Advanced training in robotic spine surgery utilizing the Mazor Renaissance Robotic® system
- Advanced training in cervical disc replacement surgery
- Served as Executive Chief Resident of the Orthopaedic Residency Program at Warren Alpert Medical School of Brown University, Rhode Island Hospital, 2011-2012
- Awarded the Haffenreffer House Staff Excellence Award at Warren Alpert Medical School of Brown University, Rhode Island Hospital, 2012
- Awarded the Lucas/Palumbo Spine Achievement Award at Warren Alpert Medical School of Brown University, Rhode Island Hospital, 2012
- Inducted into the Alpha Omega Alpha Honor Medical Society
- Selected by his peers as Most Valuable Resident at Brown University 2010
- Served as a member of the Graduate Medical Education Committee at Warren Alpert Medical School of Brown University, Rhode Island Hospital, 2012-2013
- Member of the American Academy of Orthopaedic Surgeons (AAOS); North American Spine Society (NASS); Cervical Spine Research Society (CSRS); Orthopaedic Trauma Association (OTA)
- Named to the New Jersey Monthly Jersey Choice Top Doctors list
- Published numerous peer-reviewed articles, abstracts and chapters in the fields of spine surgery and orthopaedic trauma

HOSPITAL AFFILIATIONS

- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

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University Orthopaedic Associates

James T. Monica, MD

Dr. Monica is board certified in orthopaedic surgery. He obtained his medical degree from Columbia University College of Physicians and Surgeons after completing his undergraduate degree from Johns Hopkins University. He completed his internship at the Brigham and Women's Hospital Department of Surgery and his residency at Harvard Medical School, Harvard University. He then completed fellowships at Massachusetts General Hospital specializing in hand and upper extremity surgery as well as open and arthroscopic shoulder surgery.

ACCOMPLISHMENTS

- Subspecialty certified in hand and upper extremity surgery
- Orthopaedic hand and upper extremity consultant for Princeton University Athletics
- Rutgers Robert Wood Johnson Hospital Department of Orthopaedic Surgery Volunteer Faculty Teaching Award, 2013
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Chief Resident, Harvard Combined Orthopaedic Residency Program, Massachusetts General Hospital 2009
- Resident Representative, Massachusetts General Hospital Committee on Teaching and Education, 2007-2009
- Inducted into Alpha Omega Alpha Honor Medical Society, 2016
- Published numerous peer-reviewed articles and book chapters, and presented at regional, national and international scientific meetings in the United States, Scotland and Korea

HOSPITAL AFFILIATIONS

- CARES Surgicenter
- Penn Medicine Princeton Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

Robert Pannullo, MD

Dr. Robert Pannullo, MD is a board certified interventional physiatrist, pain management physician and independent medical examiner. Dr. Pannullo received his medical degree from Wayne State University School of Medicine and graduated with highest honors from Upsala College, where he earned a Bachelor of Science in biochemistry. He received postgraduate training at New York-Presbyterian Weill Cornell Medical Center and completed his fellowship in interventional spine techniques and pain management at OSS Health in York, Pennsylvania, under the direction of Michael B. Furman, MS, MD.

ACCOMPLISHMENTS

- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Wayne State University School of Medicine Honors: family medicine, general surgery
- Recommended for clinical honors in internal medicine
- Member, American Academy of Physical Medicine and Rehabilitation
- Member, American Academy of Pain Medicine
- Member, Phi Beta Kappa honors society

HOSPITAL AFFILIATIONS

- Robert Wood Johnson University Hospital Somerset
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

David R. Polonet, MD

Dr. Polonet is board certified in orthopaedic surgery by the American Board of Orthopaedic Surgery. He obtained his medical degree from the Renaissance School of Medicine at Stony Brook University after earning his undergraduate degree from Stanford University. He completed his internship and residency at the Renaissance School of Medicine at Stony Brook University, New York. Dr. Polonet then completed a fellowship in traumatology at Harborview Medical Center.

ACCOMPLISHMENTS

- Subspecialty certified in traumatology
- Director of Orthopedic Trauma at Jersey Shore University Medical Center
- Academic appointment as a clinical associate professor of orthopaedic surgery at Rutgers Robert Wood Johnson Medical School
- Volunteered as a surgeon in Haiti following the 2010 earthquake
- Associate Editor, *Journal of Orthopaedic Trauma*
- Fellow of the American Academy of Orthopedic Surgeons (AAOS)
- Fellow of the American College of Surgeons
- MD with Distinction in Research, Renaissance School of Medicine at Stony Brook University, New York
- Published author in peer-reviewed journals
- Regional and national lecturer on orthopaedics
- Named to the Select Surgeons Bone & Joint list

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Surgical Institute (SI)

Sergei Pushilin, MD

Dr. Sergei Pushilin is board certified in orthopaedic surgery. He graduated magna cum laude with a bachelor's in psychology from Brooklyn College. He obtained his medical degree from SUNY Downstate College of Medicine and completed his residency in orthopaedic surgery at State University of New York (SUNY) Downstate Medical Center. Dr. Pushilin then completed a trauma fellowship in orthopaedic surgery at University of Pittsburgh Medical Center. He also served as a clinical instructor of orthopaedic surgery at the University of Pittsburgh School of Medicine.

ACCOMPLISHMENTS

- Assistant Director of Orthopaedic Trauma at Jersey Shore University Medical Center
- The Christopher Pavlides, MD Memorial Award
- The Brooklyn College Foundation Presidential Scholarship
- The Carolyn R. Freeman Award
- Served as a team physician for the NYC Public School Athletics League (PSAL)
- Volunteered in the Brooklyn Free Clinic
- Lecturer and published author in peer-reviewed journals
- Fluent in Russian

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

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Carlos A. Sagebien, MD

Dr. Sagebien is board certified in orthopaedic surgery. He obtained his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) after earning his undergraduate degree from Hamilton College. He completed his internship and residency at Rutgers New Jersey Medical School. Dr. Sagebien then completed a fellowship in traumatology at R Adams Cowley Shock Trauma Center at the University of Maryland.

ACCOMPLISHMENTS

- Subspecialty certified in traumatology
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Director of Orthpaedic Trauma, Robert Wood Johnson University Hospital
- Member Orthopaedic Trauma Association
- Fellow of the AO Foundation, Davos, Switzerland
- 2015 Volunteer Faculty Award recipient, Robert Wood Johnson Medical School
- Published author in peer-reviewed journals
- Speaker at numerous regional and national scientific meetings
- Named to the Select Surgeons Bone & Joint list

HOSPITAL AFFILIATIONS

- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

Ravi Verma, MD

Dr. Ravi Verma is a board certified orthopaedic spine surgeon. He was born and raised in Monmouth County, New Jersey. Dr. Verma earned his medical degree from Rutgers New Jersey Medical School (formerly UMDNJ) through the highly competitive seven-year medical program with The College of New Jersey. He was one of 12 people selected from a pool of over 400 candidates for this program.

He completed his orthopaedic surgery residency at New York Medical College (NYMC). While at NYMC, a busy Level 1 regional trauma referral center, he was actively involved in treating patients with orthopaedic and spine high-energy trauma injuries.

Dr. Verma completed a spine surgery fellowship at the Hospital for Special Surgery, ranked the top orthopaedic hospital in the country for the past 10 years. While at HSS, Dr. Verma learned expert techniques in treating spine patients with minimally invasive surgery, scoliosis correction surgery, motion-sparing (nonfusion) spine surgery with artificial disc replacement and using non-narcotic pathways for spine surgery patients. Dr. Verma also treated patients at NewYork-Presbyterian Weill Cornell Medical Center and spine oncology patients at Memorial Sloan-Kettering Cancer Center.

Throughout his education and training, Dr. Verma has maintained a strong interest in researching topics that will benefit his patients. At Rutgers, he was awarded the Alpha Omega Alpha (AOA) Honor Society Medical Student Research Award for his work on the role of diabetes in orthopaedic fracture healing. While at NYMC, he studied the effects of hematomas in the spine of polytrauma patients–research for which he won the best clinical paper.

In addition, Dr. Verma did extensive research on spine deformity (scoliosis), minimally invasive spine surgery, motion preservation (artificial disc replacement) and the use of non-narcotic pathways in spine surgery. He was one of 10 fellows selected to present his research at the HSS Research Symposium.

ACCOMPLISHMENTS

- New York Medical College (NYMC)–Louis Del Guercio Research Day–1st place–Best Clinical Paper
- Alpha Omega Alpha (AOA) Medical Student Research Recognition Award
- NJMS Alumni Association Scholarship

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Robert Wood Johnson University Hospital Somerset
- Surgical Institute (SI)
- University Center for Ambulatory Surgery (UCAS)

Kenneth G. Swan, Jr., MD

Dr. Swan is board certified in orthopaedic surgery. He obtained his medical degree from Cornell University, where he also earned his undergraduate degree with a Bachelor of Science in Nutritional Sciences. He completed his internship and residency at the Rutgers New Jersey Medical School (formerly UMDNJ). He subsequently did a sports medicine and shoulder surgery fellowship at the University of Colorado.

ACCOMPLISHMENTS

- Subspecialty certified in orthopaedic sports medicine
- Director, Division of Orthopedic Surgery, Hackensack Meridian Raritan Bay Medical Center
- Director, Human Motion Institute, Hackensack Meridian Raritan Bay Medical Center
- Fellow of the American Orthopaedic Society for Sports Medicine (AOSSM)
- Fellow of the American Academy of Orthopaedic Surgeons (AAOS)
- "Gold Doc" Humanism Award, Arnold P. Gold Foundation, 2014
- Named to the *New Jersey Monthly* Jersey Choice Top Doctors list
- Academic appointment as a Clinical Associate Professor of Orthopaedic Surgery at Rutgers Robert Wood Johnson Medical School
- Volunteer Faculty Award, Department of Orthopaedic Surgery, Rutgers Robert Wood Johnson Medical School, 2011, 2016
- Resident Teaching Award, Department of Orthopaedic Surgery, Rutgers New Jersey Medical School, 2005
- Published author in peer-reviewed journals
- Regional and national lecturer on orthopaedics
- Named to the Castle Connelly Top Doctors list

HOSPITAL AFFILIATIONS

- CentraState Medical Center
- Hackensack Meridian Jersey Shore University Medical Center
- Hackensack Meridian Old Bridge Medical Center
- Hackensack Meridian Raritan Bay Medical Center
- Robert Wood Johnson University Hospital New Brunswick
- Saint Peter's University Hospital
- University Center for Ambulatory Surgery (UCAS)

HIGH SCHOOL AFFILIATIONS

- Woodbridge High School
- Colonia High School
- John F. Kennedy Memorial High School
- Perth Amboy High School
- Union High School

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Welcomes New Doctors

Kevin Schafer
Foot & Ankle Surgery

Hesham Abdelfattah
Hand & Upper Extremity Surgery

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Did you know?

Some Facts about Back Pain:

- Back pain can affect people of all ages, from adolescents to the elderly.
- Back pain is the third most common reason for visits to the doctor's office, behind skin disorders and osteoarthritis/ joint disorders.
- 31 million Americans experience low back pain at any given time. Experts estimate that up to 80% of the population will experience back pain at some time in their lives.
- Back pain is one of the most common reasons for missed work. One-half of all working Americans admit to having back pain symptoms each year.
- Worldwide, years lived with disability caused by low back pain have increased by 54% between 1990 and 2015.

When back pain gets you down, you can turn to the experts at UOA to provide you with the best care. From highly skilled physical therapists to fellowship trained pain management and spine specialized orthopaedic surgeons, we are here to help you get past your back problem.

Meet our Spine Specialists:

GINO CHIAPPETTA, MD

MATHEW MCDONNELL, MD

RAVI VERMA, MD

ROBERT PANNULLO, MD

Check out our informational videos on our YouTube Channel: www.youtube.com/c/Uoanjortho

Herniated discs and Spinal Stenosis

Cervical disc herniations and cervical fusion

Disc Replacement and Non-Fusion Options

Care of Lumbar Disc Herniations in Athletes

Tips to protect your back

BY PATRICK S. BUCKLEY, MD

Meniscus Root Tears

Meniscus tears are a common reason to seek care from an orthopaedic surgeon. The meniscus acts to cushion the articular cartilage of the knee as "shock absorbers" to prevent wear and damage with activities. In addition, they play a role in knee stability, allowing the joint to function properly. A meniscus tear can occur in combination with a ligament tear, such as an anterior cruciate ligament (ACL) tear, or in isolation. Often a meniscus tear occurs with a deep squat or twisting mechanism, where the patient will feel a pop in the back of their knee. Swelling and pain can follow, and this scenario should be evaluated by an orthopaedic specialist.

Although there are a number of different types of meniscus tears, meniscus root tears require particular attention and discussion. The attachments of the medial (inside) and lateral (outside) meniscus to the tibia are called the meniscus roots. These function to anchor the meniscus to the bone during weight bearing, allowing the meniscus to function properly. The root attachment is a critical part of the meniscus, and when torn, can have detrimental effects on the function and long-term health of the cartilage. When a meniscus root is torn, the remaining meniscus, although present, does not function and this scenario is equivalent to not having any meniscus at all. Because of this, the main concern with a meniscus root tear is the increased stress and load that will be placed on the cartilage of that compartment. Over time, this can lead to premature arthritis, and if severe, may require a joint replacement.

Image 1: MRI appearance of a medial meniscus root tear. (yellow arrow)

Image 2: Arthroscopic appearance of a medial meniscus root tear. (red arrow)

For this reason, if the cartilage is not in the advanced stages of arthritis, I will often recommend performing a meniscus root repair. This arthroscopic procedure can restore the attachment of the meniscus root to the tibia, helping to prevent the long-term cartilage damage that can result with neglect of this injury.

This procedure is performed through two small arthroscopic portals in the front of your knee and a small (2-3cm) incision just below this. It is through this third incision; two small tunnels are drilled through the bone to repair the meniscus. In addition to providing an anchor point for the meniscus repair, the bone tunnels help to release growth factors and bone marrow that aid in meniscus healing. High strength suture tape is used to anchor the meniscus to the bone and tied over a small metallic button on the front of the knee to allow healing in the correct position.

Image 3: Bony bed prepared to allow for meniscus healing to bone

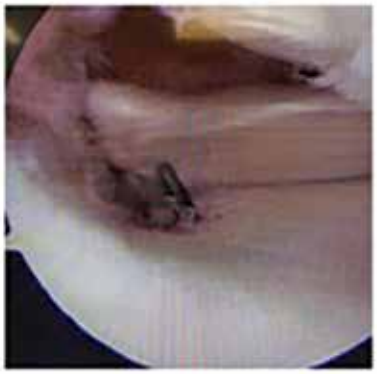

Image 4: Wire showing location of one of two tunnels drilled through the tibia.

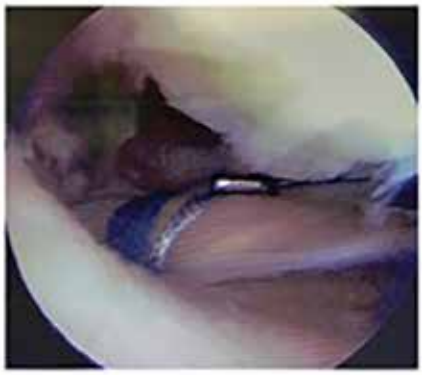

Image 5: Final arthroscopic appearance following medial meniscus root repair using tape through two trans-tibial tunnels.

After surgery, I like my patients to begin physical therapy on the first post-operative day to begin range of motion exercises and muscle strengthening. Crutches are used for the first six weeks to protect the repair, and then gradual weight bearing and continued strengthening is continued from six weeks to three months after surgery. Deep squatting is avoided for four months after surgery, and most patients return to running and an active lifestyle four to five months after surgery.

Image 6 & 7: Postoperative x-ray showing button used for fixation of meniscus root.

Dr. Patrick S. Buckley is an orthopaedic sports medicine specialist practicing in Wall Township and Morganville, NJ. He is a board certified, fellowship trained physician with expertise in both operative and non-operative treatment of knee, hip, and shoulder sports medicine injuries.

Scan to learn more
Patrick S. Buckley, MD

BY MICHAEL T. LU, MD

Rotator Cuff Surgery: Simply Life-Changing

For Eugene Fiorvanti, 20 years of living with constant shoulder pain were long enough. A powerlifter in his younger years and one who delivered newspapers for twenty years, the wear and tear of heavy lifting took its toll on Eugene's shoulder. "I knew there was something wrong with my shoulder, but I found ways to get around fully using it. There was never the "right time" to get my shoulder fixed" remarked Fiorvanti who works as a special education teacher in the Perth Amboy district. "I had to keep working and couldn't afford to be out of work for an extended period. Luckily for me, Covid changed all that as I was working from home and I figured now is as good of a time as any to get my shoulder fixed".

Luckily for Fiorvanti, he found the right surgeon in Dr. Micheal Lu, who diagnosed Fiorvanti with a massive rotator cuff tear. The plan was for Eugene to undergo a superior capsular reconstruction in conjunction with a rotator cuff repair in October 2020. This innovative procedure involves the placement of an allograft to augment the rotator cuff repair. "This may be a good option for people with irreparable rotator cuff tears who may not be a candidate for a reverse total shoulder arthroplasty" noted Dr. Lu. Eugene noted that "the surgery went well and I followed Dr. Lu's protocol to the letter. I was in a sling for 3 weeks and then started physical therapy for six weeks. Within 3 weeks, I was feeling better and could do most activities of daily living. By February, I had completed PT and I was back at the gym and feeling awesome!" "The surgery not only fixed my shoulder, but it really gave me a new lease on life! At six months, I was in Myrtle Beach on a vacation and I decided to give body surfing a try. I wanted to put my shoulder to the test. Much to my surprise, I was back riding the waves and having fun again.. By 8-9 months, I would say I was 95-100% and no longer even thought about the fact that I underwent shoulder surgery. It literally was a new lease on life. I got sick and tired of being sick and tired. I turned off the news, got back to the gym, began eating better, walking every night, and since the surgery I have lost 75 pounds! I want to be an example for others who may be having shoulder issues that have limited their activity and let them know, they have options. I want to let people know that you don't have to be a hostage of life. I'm really lucky I found Dr. Lu. His surgical expertise and compassionate care have really made a huge difference in my life. I'm so happy, I want to squeeze Dr. Lu and give him a big hug." Eugene Fiorvanti is a living, thriving example of a patient who really has gotten his "Life in Motion".

Rotator cuff tear

Rotator cuff repaired

Scan to learn more about Dr. Michael Lu

Dr. Lu is an upper extremity specialist and sees patients in the Avenel and Morganville offices.

BY RYAN KAY, PT, DPT

The Importance of "Pre-hab" before surgery

More often than not, patients think of physical therapy (PT) as the "next step" after recovering from orthopaedic surgery. In post-operative physical therapy, therapists work to help patients restore proper body mechanics, improve posture, decrease pain, improve range of motion (ROM), joint mobility, soft tissue mobility, and work on functional strengthening to reduce impairment and improve function. Over time, the scope of practice and role of PT has evolved as new research has been published.

Pre-rehabilitation, which we call "Pre-hab", has become a successful approach with elective surgeries. At University Orthopaedic Associates, our most common pre-hab patients have had the following surgical procedures: ACL reconstruction, Partial/Total knee replacement, Rotator cuff repair, Shoulder replacement, Spinal surgeries. The main objective of pre-hab is to decrease pain, reduce joint effusion, improve pain-free ROM in the respective joint, and improve strength in the extremity to reduce impairment after surgery.

In the post-operative phase, there is an immediate inflammatory response in the body to help heal the tissue(s) and other structures that are involved. As a result, the respective joint becomes stiff, painful, and develops restriction in motion. The knee, for example, commonly experiences the post-surgical impairments which can lead to difficulty in the ability to straighten or bend the knee fully. Due to this restriction, we see a decrease in strength of the quadriceps (muscle along the front of the thigh). Therefore, it becomes more difficult for the patient to stand, walk, negotiate stairs or return to previous level of activity.

To schedule an appointment at The Center for Rehabilitation and Sports Excellence offices in:
Somerset: 732-537-0200
Wall: 732-938-5333
Woodbridge: 732-362-7977
Morganville: 732-387-4925

When patients schedule pre-hab appointments, we have noticed improved functional outcomes following surgery. When patients learn exercises during the pre-hab phase, they demonstrate confidence with the exercise protocols during the post-operative recovery. Because they have established a rapport with the therapist, their understanding of the post-operative protocol and the timeline of their recovery is enhanced. Patients are also more comfortable returning to the PT clinic after surgery. All of this will lead to quicker recovery times and happier patients.

If you have an upcoming surgical procedure planned and are interested in pre-hab, please reach out to The Center for Rehabilitation and Sports Excellence at UOA for more information. Call the location convenient to you and ask to speak to one of our Physical Therapists. We look forward to working with you to improve your surgical outcome.

Scan to learn more about

The Center for Rehabilitation **Ryan Kay, PT, DPT**

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Dr. Charles Gatt Receives Special Award for Innovation from EJI Excellence in Medicine Foundation

Winner of the Excellence in Research Award

Tissue-Engineered Total Meniscus Replacement With a Fiber-Reinforced Scaffold in a 2-Year Ovine Model

Jay M. Patel,*† PhD, Salim A. Ghodbane,*† MEng, Andrzej Brzezinski,* MD, Charles J. Gatt Jr,*† MD, and Michael G. Dunn,*†‡ PhD

Investigation performed at Department of Orthopaedic Surgery, Rutgers Biomedical and Health Sciences–Robert Wood Johnson Medical School, New Brunswick, New Jersey, USA

Scan to learn more about Charles J. Gatt, Jr., MD

University Orthopaedic Associates is proud to announce that Dr. Charles J. Gatt, Jr. has received the Special Award for Innovation from the EJI Excellence in Medicine Foundation for his research in the field of tissue engineering and the development of MeniscoFix™, a patented implant developed to replace the meniscus of the knee after severe injury. He was featured on the cover of the 2021 spring issue of *MDAdvantage* and wrote about his dedication to innovation for a column in the journal. Dr. Gatt was also interviewed for *The MDAdvantage Podcast*, discussing MeniscoFix™ and how the field of orthopaedics is changing and growing.

MDAdvantage is a leading provider of medical professional liability insurance. An organization for physicians built by physicians, its operation in Lawrenceville, New Jersey, upholds thoughtful investment practices, sound underwriting, and responsible claim resolutions to ensure that they are a partner to the practices they serve. MDAdvantage is a proud member of the Medical Professional Liability Association (MPLA).

Dr. Gatt is a board-certified orthopaedic surgeon, specializing in orthopaedic sports medicine at UOA. He obtained his medical degree from Rutgers Robert Wood Johnson Medical School (formerly UMDNJ) and then completed his fellowship in orthopaedic sports medicine at the Cleveland Clinic Foundation. He has received many patients' choice awards, is a NJ Monthly Jersey Choice Top Doc and was elected by his peers for inclusion in Best Doctors in America®.

UOA's Recently Published Research

Our doctors think research and improving care is important and we are continually working to improve care through our ongoing research

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- **Winner of The 2021 "Ranawat resident award"** for the best research paper by a resident or fellow.
- Presented as Podium presentation Eastern Orthopaedic Association 2021
- Accepted for presentation AAOS 2022
- Submitted for publication

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