


# OJO

The Oregon Journal  
of Orthopaedics

Volume VII June 2018



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## Letter from the Editors

Welcome to the seventh volume of *The Oregon Journal of Orthopaedics*. We want to thank our faculty, residents, alumni and all of our supporters for their contributions this year.

In this edition we highlight the hard work of various members of our community, from attending surgeons, to residents, to medical students, to nursing staff. Dr. Gundle discusses the use of a database to improve the care of patients with metastatic bone disease. We highlight the work of the medical students and residents involved in our Orthopaedic Surgery Interest Group. Additionally, we have included a profile piece on Mary Hayden, one of our beloved OR nurses who will be retiring early next year.

We introduce our newest faculty member Dr. Ryan Wallenberg. Dr. Wallenberg is a former resident at OHSU and is practicing fulltime at the Portland VA in the field of arthroplasty and general orthopaedics.

In the research field we have a selection of abstracts that highlight current projects taking place at our institution and in the community. We highlight the senior projects of our five chief residents at OHSU.

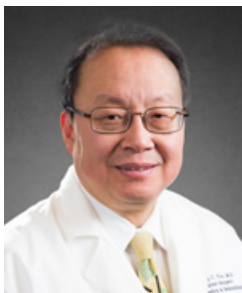
Faculty Editor: Darin Friess, MD

Senior Editors: Nikolas Baksh, MD and David Putnam, MD

Junior Editors: Trevor Barronian, MD and Jason Laurita, MD

Editors *Emeriti*: Ben Winston, MD, Karlee Lau, MD, Peters Otlans, MD and Elizabeth Lieberman, MD

## Letter from the OHSU Chairman



What is the difference between hope and wish? Most of the time, we use these two words interchangeably. However, I feel that they are two very different words that denote two very different mindsets. Hope is aspirational. It denotes a goal and the essence of what we believe to be good. A wish is a desire for an outcome after the work has been done. A wish is a dangerous thing in a surgeon's life as it often leads us astray from the logical reasoning necessary for proper management of complications. A wish does not make a wrongly placed screw right itself or make bacteria disappear from an infected wound. I hope that in our training we help our students develop the capacity for unlimited aspirational hope, as well as the capacity to guard against dangerous wishes. We need to solve our patients' problems as dispassionately as possible to ensure we can take care of their issues expeditiously and effectively.

Sincerely,

Jung Yoo, MD

Chair and Professor, OHSU Department of Orthopaedics & Rehabilitation



## Letter from the OHSU Program Director



At OHSU every year we deliver great clinical care, and we also have the opportunity to observe the growth of a new class of residents. This year was no different, with the start of five bright new interns and the graduation of five competent surgeons. During the five years these graduating residents were here, they saw the educational curriculum improve each year. In 2017, the American Council of Graduate Medical Education (ACGME) released a major update to the common program requirements. At a basic level, these changes simply change some words; however, the philosophy speaks to the overall goals of where medical education is moving. After many years of focus on the “80-hour work-week,” the ACGME removed the words “duty hours” from the entire document, since that focuses too much on menial labor. They have replaced this with the phrase “The Clinical Learning and Working Environment.” New principles for training have been implemented, including educating residents on principles of safety and quality of care, professionalism, professional development, well-being, and the joy to be found in problem solving and intellectual discovery.

What does all this mean for our residents? It means a new focus on capturing the heart and soul of medicine. Earlier rules that limited interns to a 16-hour work shift have been removed. Large research studies found no benefits to patient care or resident well-being when comparing a 16-hour to a 24-hour shift. I’m sure some of you remember working 36 hours if not 48 hours straight as an intern, and those days are thankfully gone. There is a new focus on eliminating “work compression” on the residents, something we would all appreciate as we are asked to do more work in less time. Nationwide, all residents are expected to have access to mental health professionals 24 hours a day, with time released from work for visits as needed. All residents are expected to learn and participate in quality improvement, such that it is no longer enough to come to work, but everyone is expected to improve their work as well. Our annual survey this year included not only the typical questions about work and education, but also nearly 20 questions about burnout. Finally there is a new focus on development of faculty to teach and maintain a team environment conducive to learning.

At OHSU Orthopedics & Rehabilitation, we will strive to meet these goals for our residents. They are a bright bunch who work very hard to learn everything needed for successful careers as surgeons in only 5 short years. They learn with different and perhaps more efficient methods than I could have ever imagined. Every year they still find time to produce this wonderful journal as well. Please enjoy it. Finally, we are always looking for opportunities to engage with our alumni. If you would like to attend Grand Rounds, Beals Day or participate in our educational program, please let us know.

Sincerely,  
Darin Friess, MD  
Residency Program Director

## Good Samaritan Regional Medical Center Orthopedic Surgery Residency Program

### Letter from the Program Director



The Orthopedic Surgery residency at Good Samaritan Regional Medical Center is finishing out its 9th year with the impending graduation of its 4th class on June 22, 2018. All three graduates will be moving on to post-residency fellowships. Jun Kim will be starting a Joint Arthroplasty fellowship at Wake Forest in Winston-Salem, NC. Doug Blaty and Stefan Yakel will both be starting a Spine Surgery fellowship at Twin Cities Spine Center in Minneapolis, MN.

Our fourth years have just completed the match for post-residency fellowships and all three have matched into Sports Medicine Fellowships. Heidi Smith will be going to The University of New Mexico in Albuquerque, NM. Tim Degan will be at Baylor University in Houston/San Antonio, TX, with Dr. Stephen Burkhart. Brian Scrivens will go to the University of Buffalo in Buffalo, NY.

As our program has continued to grow and mature, we will be undergoing an evolution of the leadership within the residency this coming academic year. Dr. Luis Vela, DO has been the program director of the Orthopedic Surgery Residency since its inception 9 years ago. His practice specializes in Hand/Upper Extremity surgery and he has served as a team physician for the Oregon State University Beavers, working with the baseball team and other upper extremity throwing athletes. He will be turning over his administrative responsibilities to Dr. Jacqueline Krumrey, MD who will serve as the program director at the start of the 2017-2018 academic year. Dr. Krumrey has also been involved with the residency since its inception, serving as the program's Associate Director and main Orthopedic Trauma attending. While Dr. Vela will step down as the program director, he will continue his role as teaching faculty/attending at Good Samaritan Regional Medical Center.

Dr. Jonathan Evans, DO who has also been involved with the residency from the beginning as both attending and Associate Director, will also be handing over his administrative responsibilities. He has practiced General Orthopedic Surgery in the area since the residency began, and will continue his role as teaching faculty. Dr. Kelli Baum, DO will transition into the Associate Director role focusing on academic responsibilities. She was a previous resident at Good Samaritan Regional Medical Center, and recently completed her Joint Arthroplasty fellowship at Wake Forest University. She returned to Oregon this past year to begin her practice, and has served as an attending since the beginning of this academic year.

One of our goals for this next year is to receive ACGME accreditation. We are currently in the pre-accreditation phase. We hope to complete the application process this fall and receive initial accreditation before the end of next academic year. We are excited about this transition and the opportunity to continue the residency as part of the ACGME.

Samaritan Health Services recently opened a new simulation lab near the hospital. This lab will eventually have permanent stations for skills including arthroscopy, as well as wet-lab capability. We recently used this for the first time in conjunction with the Trauma attendings from Legacy Emanuel in Portland. We are very excited about the opportunity this lab presents and will be putting it to full use throughout the upcoming academic year.

In addition to our own simulation lab, the residents have been able to take part in other lab education opportunities. Our third and fourth year residents attended an upper extremity trauma lab at Acumed along with three other orthopedic surgery residency programs. This was our fourth year participating in this competency lab. These same residents also participated in the week-long arthroscopy boot camp at OHSU. This collaboration with OHSU has been an invaluable part of the education and we are grateful for the opportunity to work closely with their residency program. Thank you Dr. Friess and Dr. Brady!

From a research standpoint, one of our chiefs had a case report on the “cauda equina hemangioblastoma” accepted for publication in the Journal of World Neurosurgery. One of our other chiefs presented on “Tranexamic Acid Use for Intertrochanteric Hip Fracture” at the Oregon Association of Orthopaedics conference. Several of our residents have presented at the Oregon State University athletic training seminar, the Dillehunt lecture series, as well as Beattie lecture series.

We would like to thank all of our education partners, (OHSU, Legacy Emanuel, Shriners, and Summit Orthopaedics) for their contributions to the education of our residents. We would also like to thank Dr. Bruce Le down in Visalia, CA for his 8-week orthopedic surgery sports rotation, as well as Dr. Nicholas Tedesco down in Eugene, OR for his additional teaching in total joints and oncology.

Lastly, we would also like to thank all of our local faculty down here in the valley. We are truly grateful to the attendings and other support staff at these locations for their time and dedication to the program.

We would like to wish our graduates all the best and good luck during fellowships. As we move forward with the change in our program leadership, we hope to continue our collaboration and relationships with all of the above-mentioned partners for the education of our residents.

Sincerely,



Luis Vela, DO, FAOA  
Program Director  
Orthopedic Surgery  
Samaritan Health Services

# Faculty Directory 2017-2018

OHSU

## Adult Reconstruction

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Thomas Huff, MD



Kathryn Schabel, MD

## Foot & Ankle

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James Meeker, MD

## Orthopaedic Oncology

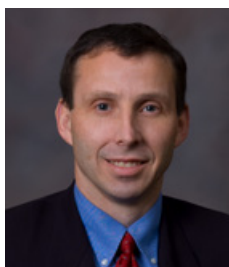
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Yee-Cheen Doung, MD



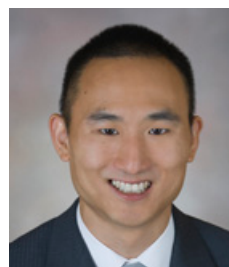
Kenneth Gundle, MD



James Hayden, MD, PhD



Matthew Halsey, MD



Scott Yang, MD

## Pediatrics

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## Physical Medicine & Rehabilitation

---



Hans Carlson, MD



Nels Carlson, MD



Erik Ensrud, MD

## Podiatry

---



Trish Ann Marie Otto, DPM

# Faculty Directory 2017-2018

OHSU

## Research / Basic Science

---



**Brian Johnstone, PhD**  
Director, Research



**Lynn Marshall, ScD**



**Jayme Hiratzka, MD**  
Director, Spine



**Clifford Lin, MD**



**Jung Yoo, MD**  
Chairman

## Spine

---

## Sports Medicine (Primary Care)

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**Rachel Bengtzen, MD**



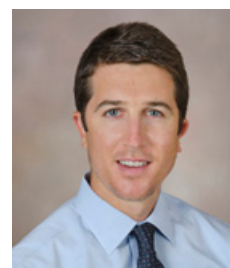
**James Chesnutt, MD**



**Carol Federiuk, MD,  
PhD**



**Douglas McKeag, MD**



**Ryan Norton, DO**



**Melissa Novak, DO**



**Ryan Petering, MD**  
Co-Program Director,  
Sports Medicine Fellowship



**Sean Robinson, MD**



# Faculty Directory 2017-2018

OHSU

## Sports Medicine (Surgical)

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**Jacqueline Brady, MD**  
Associate Program  
Director



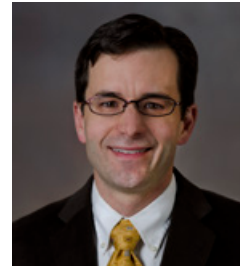
**Dennis Crawford, MD, PhD**  
Director, Sports Medicine



**Andrea Herzka, MD**

## Trauma

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**Darin Friess, MD**  
Director, Trauma &  
Residency Education,  
Vice-chairman

## Upper Extremity

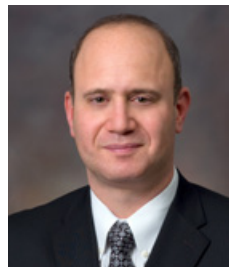
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**Adam Mirarchi, MD**  
Co-Director,  
Hand Fellowship



**Omar Nazir, MD**



**Robert Orfaly, MD**

# Faculty Directory 2017-2018

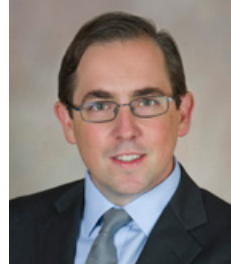
## Portland VA Medical Center Faculty



Lucas Anissian, MD, PhD



Mark Berkson, MD



Kenneth Gundle, MD



Ryan Wallenberg, MD

## Shriners Hospital for Children



Michael Aiona, MD  
Chief of Staff, Program  
Director



Jeremy Bauer, MD



Daniel Bouton, MD



Krister Freese, MD



Katie Fuchs, MD



Heather Kong, MD



J. Krajchich, MD, FRCS(C)



Ellen Raney, MD



Dennis Roy, MD  
Director of Education



Michael Sussman, MD



Michelle Welborn, MD

# Faculty Directory 2017-2018

## Legacy Emanuel Hospital



**Doug Beaman, MD**  
Foot & Ankle



**Britton Frome, MD**  
Hand/Upper Extremity



**Richard Gellman, MD**  
Orthopaedic  
Traumatologist  
Foot & Ankle



**Steve Madey, MD**  
Hand/Upper Extremity



**Amer Mirza, MD**  
Trauma/Adult  
Reconstruction

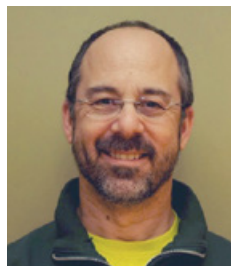


**Corey Vande Zandschulp, MD**  
Orthopaedic Traumatologist

## Kaiser Permanente, Pediatrics Faculty



**Stephen Renwick, MD**



**Ronald Turker, MD**

# Faculty Directory 2017-2018

## Orthopedic + Fracture Specialists



Brett Andres, MD



McPherson Beall III, MD



J. Brad Butler, MD



James Davitt, MD



Alex DeHaan, MD



Alec Denes Jr, MD



Paul Duwelius, MD



Jason Kurian, MD



Edward Lairson, MD



Mark Manoso, MD



Hans Moller III, MD



Linda Okereke, MD



Rolf Sohlberg, MD



Venessa Stas, MD



Robert Tennant, MD



Kimberly Workman, MD



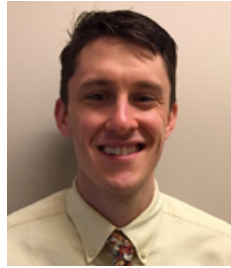
# Faculty Directory 2017-2018

Program Fellowships 2017-2018

## Sports Medicine Primary Care Fellows



Devon Hutton, MD



Kevin Jillson, MD

## Spine Fellows



Chandrakanth  
Boddur, MD



Aaron Kunkle, MD

## Hand Fellow



Jenifer Hashem, MD



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### New Faculty Spotlight:

A Q&A session with Ryan Wallenberg, MD, VA Orthopaedics

By: David Putnam, MD

**Hometown:** Medford, OR

**Medical School:** Creighton University, Omaha, NE

**Residency:** OHSU, Portland, OR

#### How have the first few months of practice gone for you?

I have really enjoyed the first few months. There have obviously been a lot of challenges and adjustments which is to be expected. OHSU did a great job in preparing me to begin practice right out of residency. The VA is an ideal setting to start practice as I am able to carefully prepare and plan for each case.

#### Do you have any current research interests or projects you are developing?

Dr. Gundle and I are getting started on a prospective study with several residents to evaluate the use of expired air carbon monoxide testing as a point-of-care screening tool for pre-operative smoking status in orthopaedic patients. I'm personally most interested in determining patient self-reported smoking status versus actual smoking status. There are a lot of interesting questions to answer regarding smoking in the peri-operative period and I look forward to this project getting underway in the next few months.

#### What has been the biggest challenge of your practice so far?

I think that biggest challenge in practice so far has been learning how to say "no" to patients that I don't feel would do well with surgery. A large proportion of patients I've seen in clinic have been medically complex. They are referred to the orthopaedic clinic for discussion of possible elective surgeries. A lot of patients come to clinic expecting to be scheduled for surgery (some even think that they will have surgery in the next few days) and it is a difficult thing to have those discussions with them and explain that surgery might make them worse. In residency, you can just defer some of these discussions to the attending, but in practice it is ultimately your decision.

#### You were a resident at OHSU as well - have you encountered any unexpected challenges in transitioning from a resident to an attending at the VA?

The transition from residency to practice has been a big adjustment but overall it has been fairly smooth. Honestly, I think the most unexpected challenge for me has been the insecurity that I am not fellowship trained. When complications occur, I find myself questioning whether I'm an adequate surgeon or what would (enter attending name) have done differently. The reality is that all surgeons have complications and that each experience shapes the way that you practice. It has been great having Dr. Berkson, Dr. Anissian, and Dr. Gundle available to bounce ideas around.

#### What goals do you have for the resident experience at the VA?

My experience at the VA as a resident was a very positive one, and I would hope that each resident that rotates through has a similar experience. The VA is a slower paced environment compared to an academic or private practice setting and it allows the residents to be thoughtful in surgery and really take ownership for each patient/case. The orthopaedics service has always been a "chief-run" service and I think that it gives the residents a taste for practice outside of residency.

#### What is your favorite thing about living in Portland?

I was born at Good Samaritan hospital in NW Portland. After spending 10 plus years of education across the country, returning to Portland for residency and the beginning of my career has been incredible. My wife and I are excited about putting our roots down in Portland, and raising our family in the place I have always called home. You can't beat the proximity to the mountains, rivers, and ocean.

# A Retirement: A Fond Farewell to Ted Vigeland, MD

By: Lizzie Lieberman, MD



**Ted Vigeland, MD**

Dr. Ted Vigeland retired last year after 45 years of dedicated service to the field of Orthopaedics in Oregon. Dr. Vigeland was born in St. Paul Minnesota, however he spent his entire medical career in Oregon. He attended OHSU for

medical school and residency and after a few years in private practice, returned as faculty. He served as interim Chairman at OHSU from July 2003 through 2004 and Vice Chairman from 2004-2010. He was the Chief of Orthopaedics at the Portland VA Medical Center from 2008 until his retirement. He was also involved in many leadership positions during his career including appointment as President of the Multnomah County Medical Society, serving as a founding member of the Oregon Association of Orthopaedists, and active membership in the Western Orthopaedic Association, and North Pacific Orthopaedic Society. He is on the Board of Trustees of the Oregon Health Sciences Foundation and has served as President of the Alumni Association for of the OHSU School of Medicine. Dr. Vigeland was founder and Chairman of a campaign to raise 1 million dollars to establish the Rodney K. Beals Orthopaedic Resource Center, in honor of Dr. Beal's decades long service in orthopaedic research, teaching, and healing. Dr. Vigeland has been the recipient of the Leo Lucas Outstanding Orthopaedic Educator Award and the Charles A Preuss Distinguished Alumni Award. He has graciously hosted graduation for

OHSU's orthopaedic residents for many years at the Waverly Country Club. We wish him well in his retirement and thank him sincerely for his service and contributions to our orthopaedic community throughout the years.

# National Metastatic Bone Disease Clinical Research at the Portland VA

By: Kenneth Gundle, MD



**Kenneth Gundle, MD**

We are using the unique size and depth of the national VA database to investigate a number of questions related to metastatic disease of the femur. Ongoing projects include evaluating regional variations in the rates

of prophylactic fixation of metastatic lesions in the femur, assessing the quality of care via rate of referral to radiation oncology for femoral metastasis, and assessing differences in outcomes (including mortality) between patients that have prophylactic stabilization versus pathologic fracture fixation of femurs. We are also comparing outcomes using arthroplasty versus intramedullary fixation for proximal femoral lesions.

The national VA data is organized as a massive relational database - collection of datasets that connect with one another via shared identifiers. Each day, nearly a million new points of data are entered into this vast organizational structure. Accessing the data requires coding using structured query language (SQL) to pull in the information of interest for the relevant patients.

The VA database includes data from all patient encounters within the VA, including inpatient, daypatient, outpatient, clinic appointments, rehabilitation appointments and rehabilitation and skilled nursing facility stays. It also includes information for Veterans treated outside of the VA but paid for by the VA.

At the core of virtually all care processes within the VA system is a broadly scoped and extensively used electronic health record system known as the Veterans Information System Technology

Architecture (VistA). VistA provides a longitudinal view for patients receiving care nationwide including diagnoses, procedures, medications, labs, physiologic measurements, and reports for just over 20 million Veterans historically. Data are aggregated from individual VistA systems to the VA Corporate Data Warehouse where it is modeled and prepared for use. When study requests are approved, project-specific data are extracted from source databases and placed in SQL tables accessible only to the research team and data managers.

To date, we have an approved IRB and access to data on patients with femoral metastases over 20 years. We have been learning the database architecture and coding away in SQL. This past year we completed a preliminary analysis showing large discrepancies in the rates of prophylactic nailing by region in the United States, which was presented at national meetings. We have also completed review articles on related topics. There are many questions to be answered, including informatics questions about data validity. Over time, we plan to build machine learning algorithms and utilize other deep learning tools. Within the next year we should have several publications and more meeting presentations – another update next year!

Our team includes orthopaedic residents Travis Phillip, David Putnam, and Duncan Ramsey as well as medical students Andrew Summers, Phillip Lam, and Jacob Mikula. Along with Dr Michael Conlin from Urology and Dr Reid Thompson from Radiation Oncology, we are building a VA Research Informatics group at the Portland VA. We've also had the support of Tahnee Groat, who is the research manager for the Operative Care Division.

# Improving Research and Technical Skills through the Orthopaedic Surgery Interest Group (OSIG)

By: Duncan Ramsey, MD

OSIG student leaders: Mikula JD; Summers A; Black LO

Resident Lead and Research Advisor: Ramsey DC, MD

Faculty Sponsor and Research Advisor: Gundle KR, MD

The Orthopaedic Surgery Interest Group (OSIG) has experienced exponential growth over the past three years, from 35 medical student members to a robust 170. Students report this is a result of the high quality and quantity of events and activities offered by OSIG that is otherwise unmatched at OHSU, most of which were launched over the same three-year period. The “First Assist” program allows medical students the chance to play an important role in the direct surgical care of orthopaedic patients and build, or deepen, relationships by working directly with resident and attending orthopaedic surgeons. Sterile technique workshops are offered to first year students shortly after matriculation. These workshops provide early exposure to surgical scenarios and the instruction necessary to ensure patient and provider safety in the OR. Through this program, early students considering careers in orthopaedic surgery gain confidence and are able to avoid common mistakes that might contaminate the sterile field. OSIG also runs simulation labs that provide the unique opportunity for medical students to learn anatomy and surgical skills from orthopaedic residents and attendings on cadaveric specimens.

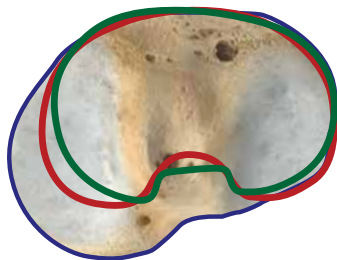
The continuity of monthly research meetings is one of the greatest strengths of OSIG. These meetings allow students the opportunity to learn first-hand about the academic research process, join resident and attending research projects, and present and workshop research with their peers. Since the inception of the research group, students have been a part of numerous peer-reviewed publications in prestigious journals such

as The Journal of Bone and Joint Surgery, the American Journal of Sports Medicine, the Journal of Orthopaedic Trauma, and Clinical Orthopaedics and Related Research. Students have also greatly contributed to abstracts and posters presented at national meetings. We expect a strong showing at OHSU Research Week in 2018 and beyond. The research conducted through the OSIG research group helps students build strong applications for residency and become well-rounded future physicians.

# SHAPE MATTERS

Achieve Both

Proper Rotation

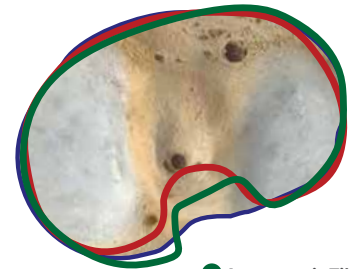


● Asymmetric Tibia  
● Symmetric Tibia



● Persona Anatomic Tibia

Maximum Coverage



● Asymmetric Tibia  
● Symmetric Tibia

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The shape of other tibias impose a choice between proper rotation and bone coverage. This leads to variability in rotational alignment. This is important, because several studies have shown a correlation between mal-rotation and anterior knee pain.<sup>1-4</sup>

Mal-rotation of implants may lead to over **50% of painful TKA cases.**<sup>5</sup>

Anatomic shape of the Persona Tibia is designed to achieve proper rotation and optimal coverage, resulting in:

Statistically significant **decrease in anterior knee pain in vivo**<sup>7</sup>

**92%**  
bone coverage<sup>6</sup>

Statistically significant **improvement** in medial plateau fit for Asian populations<sup>8</sup>

Lower incidence of downsizing<sup>6</sup>

**3% vs. 50%**  
anatomic non-anatomic

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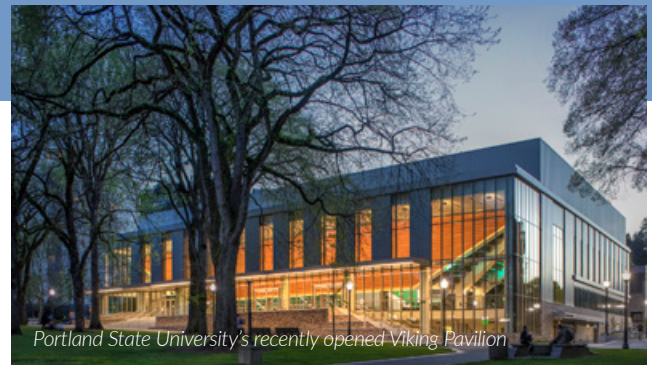
# OHSU and PSU Partner to Enhance the Sports Medicine Experience

By: Peters Otlans, MD

The Portland State University campus is located just north of the slopes of Marquam Hill, Oregon Health & Science University's home. The neighboring universities have a history of collaboration, perhaps most noticeably with a joint School of Public Health. The two universities have recently increased these efforts, announcing in 2016 that OHSU would be the primary medical provider for PSU Athletics. The Viking athletic department, as Portland State teams are nicknamed, boasts fourteen NCAA Division I one teams and hundreds of athletes who have medical needs both on and off the field. The student-athletes benefit from the multidisciplinary teams available at OHSU, and the OHSU providers and trainees reap the benefits associated with caring for varsity athletes.

The relationship between Viking Athletics and OHSU began in 1986 when orthopaedic surgeon Dr. Mark Colville became Head Team Physician. In 1996, Dr. Patricia Eiff of the Family Medicine Department became Co-Head Team Physician, providing medical services. Ultimately, though, Dr. Colville moved on from OHSU but stayed involved with Portland State and Dr. Charles Webb assumed Dr. Eiff's role. So, for the last two decades, OHSU Family Medicine has served as the primary medical provider but it has been years since OHSU surgeons have provided care to the athletes.

A major shift came in 2016 when the two universities entered into an agreement in which OHSU will serve as the primary medical and surgical provider for Portland State athletics for a period of 10 years. This coincided with the renovation and expansion of Portland State's Peter Stott Center, originally built in 1966 and home to



the athletic department and several of its teams. With the expansion came the creation of the Viking Pavilion, a multipurpose space perfect for athletics, commencements, and other events. The \$52 million project had funding contributions from OHSU, and with that came the new OHSU Sports Medicine Facility within the Viking Pavilion which officially opened in April 2018. With this facility "we have tripled the space available for injury evaluation, treatment and rehabilitation. There are offices for the full-time staff and shared open office area for the graduate assistants. We were able to fund a 725-gallon cold water plunge tank for post-practice treatments. The facility is now very professional and with a dedicated physician office," explains Jim Wallis, ATC/R, PSU Assistant Athletic Director for Sports Medicine, outlining a few of the perks of the new facilities. Athletic Director Valerie Cleary points out another major benefit of the OHSU Sports Medicine Facility: "We have already felt the impact of the facility in the student-athlete recruitment process and the ability to provide student-athletes with a high-level treatment facility."

With the new agreement between the universities, OHSU orthopaedic surgeon Jacqueline Brady, MD and Family Medicine's Melissa Novak, DO have assumed the role of Co-Head Team Physicians. Along with four full-time athletic trainers and four graduate assistant athletic trainers, who work directly with the teams, Dr. Brady and Dr. Novak spend time in game coverage and providing direct hands-on care. For additional needs, they coordinate other aspects of care, such as visits with other specialists or therapists at OHSU. Integrating all of the available resources is a challenge and as Dr. Brady puts it, "the first year was sort of a scramble

to get all these things in place to understand what the needs were, to make sure that we had the resources, but now I think we've hit our stride." The effort is paying off, and the PSU athletic department is very appreciative. "Having access to specialists that are both nationally and internationally recognized as leaders in their field has only enhanced our ability to provide the highest level of medical care to all 280 of our student athletes," states Jim Wallis. Director Cleary has noticed the efforts of Dr. Brady, Dr. Novak, and others: "The physicians are highly accessible and highly visible within our department. The OHSU team does an amazing job of communicating with the Sports Medicine staff and student-athletes. The proximity of OHSU merely blocks away allows student-athletes to seek specific treatment in a timely fashion."

Just as OHSU's presence at Portland State has enhanced the student-athlete experience, working with Portland State athletics has enhanced the experience of providers and learners at OHSU. There is a learning curve to working directly with athletes. For the last two years, much of Dr. Brady's duties have involved working closely with the Viking football team, including traveling with the team. This poses different challenges than her regular clinical practice. "There is a level of access and responsiveness in team coverage that is far beyond clinical care. Patients are welcome to contact me, but usually there is not a level of urgency like 'Hey, can we make this decision before the game tomorrow?'" she explains. This unique experience presents the perfect opportunity for OHSU trainees to gain valuable insight into the unique field of sports medicine.

Dr. Ryan Petering from the Family Medicine department at OHSU began his career in Portland as a resident. During that time, Dr. Webb was developing a new Primary Care Sports Medicine Fellowship. After residency, Dr. Petering stayed on at OHSU to serve as the program's first fellow in 2009. After two years, the fellowship expanded to include two fellows, where it remains today. Fellows spend time covering sporting events and holding clinic on campus with Dr. Brady and Dr. Novak. Today, Dr. Petering serves as the OHSU



*Team physician Melissa Novak, DO, former Sports Medicine fellow Carl Rasmussen, MD, team physician Jackie Munch, MD, and orthopaedic surgery resident Peters Otlans, MD, prior to a 2016 Portland State Viking football game.*

Sports Medicine Medical Director and Primary Care Sports Medicine Fellowship Director. He has seen the benefit of working with PSU athletes during competition, noting that with sports medicine training and sideline coverage experience "There's no way to mimic it for anyone, a surgeon or a nonoperative person, a trainee or a faculty member," and with firsthand experience "the benefit is just overwhelming. You get to see the athletes on the front line, you get to see immediate injury, management, and care." These experiences are valuable for anyone hoping to either be a team physician or work with athletes.

Two years in, the collaboration between OHSU and Portland State University has been successful and there have been clear benefits for both sides. Portland State gets direct access to OHSU physicians and other services, and OHSU providers and trainees get the rich experience of working directly with the athletes. Dr. Petering hopes "that over the next year or two, we can start bringing more learners into the environment just to get other people beyond our fellows exposed to this kind of role as a team physician at the college level." The two sides are working to expand services to the athletic department, as well. For example, OHSU physical therapist Chante Larlee and dietician Amanda Wittenberg, a recent OHSU graduate have been visiting campus regularly to work with the athletes directly. There are hopes to further expand these programs and develop others to maximize the services provided on the Portland State campus. It will be exciting to watch the relationship between the neighboring universities continue to grow over the next eight years and into the future.

# Dr. John O. Hayhurst, Inventor of the Suture Anchor and the Method for its Use

By: Marie Kane, MS

Dr. John Hayhurst graduated from OHSU medical school in 1970, and completed his residency at OHSU in 1975. He joined the Air Force in 1975 and remained for 2 years. Upon his return to Oregon, he practiced at the Orthopedic & Fracture Clinic, now known as Orthopedic + Fracture Specialists, until he retired in December, 2003.

Early in his practice, arthroscopy was not common. Arthroscopy as a tool for orthopaedics originated from the cystoscope, developed in the early 1800's. In 1894, Dr. Max Nitze first used his "operating cystoscope" for examining the bladder and in 1912, Dr. Severin Nordentoft used a similar device to look into the knee. He called his procedure "arthroscopy". In 1962, Dr. Masaki Watanabe performed the first arthroscopic meniscectomy, transitioning the arthroscope from purely a diagnostic tool to a diagnostic and therapeutic device. With the development of better light sources [fiber optics] and the use of cameras, the field advanced quickly.

In 1982 there were several techniques for repairing meniscal tears, but most had risk of vascular and/or nerve injury. Dr. Hayhurst developed the T-Fix, which for the first time allowed repair of meniscal tears completely inside with arthroscopic visualization, without the chance of injury to the posterior nerves and vascular structures. Under the same patent, the Fast-Fix was also developed.

Dr. Hayhurst then turned his attention to Bankart lesion repair, which at that time required large incisions through normal tissues. To remedy this, he developed the suture anchor by experimenting with small plastic pieces inserted into holes made in wood. He then patented suture anchors and the method of using them in open and arthroscopic procedures. The patent teaches the forming a hole in bone, placing a suture

through a resilient material slightly larger than the hole, pressing the material and suture into the hole, and tying tissue to the bone. This method made open procedures more accurate, but more importantly, made it possible to do procedures arthroscopically through small incisions that previously had been done open.

When approaching smaller companies to develop the suture anchor, they were interested but lacked the funds required for FDA approval. The large companies had the funds but too much bureaucracy. Was it a suture or an implant? Which of their companies should develop it? Could they really understand the device? With no prior art that does what the method patent teaches, Dr. Hayhurst found the process to be long and arduous. However, after approaching approximately 10 companies he found Acufex, who was willing to finance the development and the controlled studies necessary for FDA approval. In the early 1990's, after 8 years of development, the method and anchor were finally marketed. Smith & Nephew purchased Acufex and continued to expand their anchor and meniscal repair with the Fast-Fix line.

It would be fair to say that the ability to place sutures arthroscopically revolutionized orthopaedics!

Dr. Hayhurst gives this advice for physician-developed ideas: if you have an idea that is really a new advancement in patient care, be persistent. Get someone to listen to you. If you are turned down, go to someone else and keep at it. Find somebody who is thoroughly ethical and trustworthy. He cautions taking care with who you bounce your ideas off of - keep things very close to the vest and have a very good nondisclosure agreement. And, finally, after one success, it becomes easier. So, don't despair!

# Faculty Spotlight:

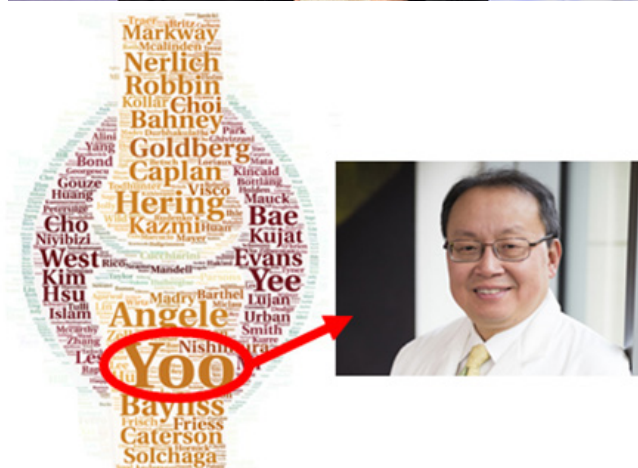
Dr. Brian Johnstone wins the Marshall R Urist Award at the ORS Annual Meeting, 2017

By: Pete Dahlgren



OHSU's Dr. Brian Johnstone received the Marshall R. Urist MD Award at this year's Orthopaedic Research Society annual meeting in San Diego. Current ORS President, Farshid Guilak presented the prestigious award which honors an investigator who has established him/herself as a cutting-edge researcher in tissue regeneration research and has done so with a sustained ongoing body of focused research in the area of tissue regeneration as it relates to the musculoskeletal system.

During his acceptance speech, Dr. Johnstone showed a word cloud created using all of his co-authors over the years. As his most frequent co-author, the name of Dr. Jung Yoo, the Chair of OHSU Orthopaedics and Rehabilitation appeared largest, emphasizing their long-standing and productive research partnership, to which Dr. Johnstone dedicated his award.



# Celebrating a Career in Orthopaedic Nursing: Interview with Mary Hayden

By: Nikolas Baksh, MD

Mary Hayden walks up to the table in the bustling, sunlit bar. Her hair is neatly curled and her clothes well-pressed. Put together, as always, although a far cry from her usual attire of sky blue scrubs. Her attitude, however, remains the same. "What would you like to know?" she asks pleasantly as she sits down.

Hayden has been circulating at OHSU for eight years, a staple in the orthopaedic trauma room, and she is beginning her well-deserved retirement next year. She has been a nurse for over thirty years, working on medical wards, surgical wards, and in the operating room. In addition, she has raised three children, has been married to her husband for forty-four years, and maintains their farm in southern Washington.

She developed a love for orthopaedics working on a surgical ward of a small hospital. "I like to get 'em up and get 'em going... the more tubes I had [to manage] the better off I felt... surgery was my thing," she said with a smile. She transitioned to working in the operating room because she wanted to experience the surgeries for herself.

She worked in pediatric and adult cardiac surgery for twelve years and was then exposed to orthopaedic trauma at Legacy Emmanuel. After some time, she decided to take a break from orthopaedics and transitioned back to a small community hospital. The itch, however, remained. "Once you go trauma one, you're spoiled for life. The little hospitals are fine but they are mostly healthy people and, you know, there's only so many lap chores you can do. I wasn't ready to stagnate myself. That's what drew me to OHSU, and I'm sorry that I didn't come here sooner."

She enjoys the challenge and hard work that is involved in caring for injured orthopaedic patients. Amidst all of the complexity and at times, chaos, of an orthopaedic trauma operating room she has defined a clear and consistent role for herself. First, she strives to be a patient advocate. "They can't talk for themselves, you know, you'll hear me say that they have a rotator cuff problem in their left shoulder. I'll let you guys know that when positioning, because I talk to them about that. You're a patient advocate, number one."

Her second goal is to have everything she can think of prepared before the case so that the case proceeds smoothly. "Your job is so stressful; there are a lot of things going on in your mind, you're thinking about the case ahead, I feel that you shouldn't have to want or think for anything, that's why you see that everything I feel that you guys need will be right there on that prep stand. I know you have a lot of things going on here about how you're going to approach the case; you don't have time to think about finding clippers and a 1000 drape, so I can take care of the menial tasks."

Her diligent attention to detail is not menial; it keeps the OR running efficiently and is an example that other nurses follow. "The other day a nurse did something and the others said, 'That's what Mary Hayden does,' and I thought, 'Oh my gosh, what do I do?'"

Her mentorship does not end there. One of her favorite aspects of her job at OHSU is being able to teach the orthopaedic residents. Every resident that has rotated through the trauma service has learned something from Hayden. It is a mutual relationship as she learns from us, as well. "You



guys get quizzed and yelled at and we get to hear it, we learn a lot, but I'm not in the hot seat, you guys are, so we appreciate it."

When asked about qualities that make a good resident and physician, she says patience is most important. She says that people who are patient tend to truly care. They want to take time to do the right thing, and do the best job that they can. "I think the doctors coming up, the ones I've been exposed to, are going to be very good."

With the end of a long and fulfilling career in sight, Hayden is turning her attention to other adventures. She and her husband have purchased a travel trailer. While growing up on a farm, she did not get to go on vacations, so she is traveling to see the United States. She is planning to go to Yosemite, Yellowstone, and Glacier National Park. Her first long trip will be to New Haven, CT to "pester" an old colleague.

She is looking forward to spending this valuable time with her husband. "You have to cherish the time you have together, make it quality, even if it's not necessarily quantity. There's been rough times, but the bigger better deal is not out there. One thing we learned is if I worked night shift, or was on call, we would not talk about anything serious until I went to bed and slept. And ate. Otherwise we'd fight. I'm serious; I'm telling you stuff."

The plates and cups on the table are empty, and the pleasant trip down Hayden's memory lane is drawing to a close. "Anything else?" she asks. There is nothing else. Mary Hayden has woken up before dawn and come in to work each day, for the past eight years, to do the best job that she can. She loves and takes pride in her work, as much today as she did when she first started many years ago. She wants to finish her career on a high note, circulating only orthopaedic cases for her last thirty days. "I told Friess, he's the last one I'm gonna work with, I want a full ortho day and if I end up [circulating] a perirectal abscess I'll be upset."

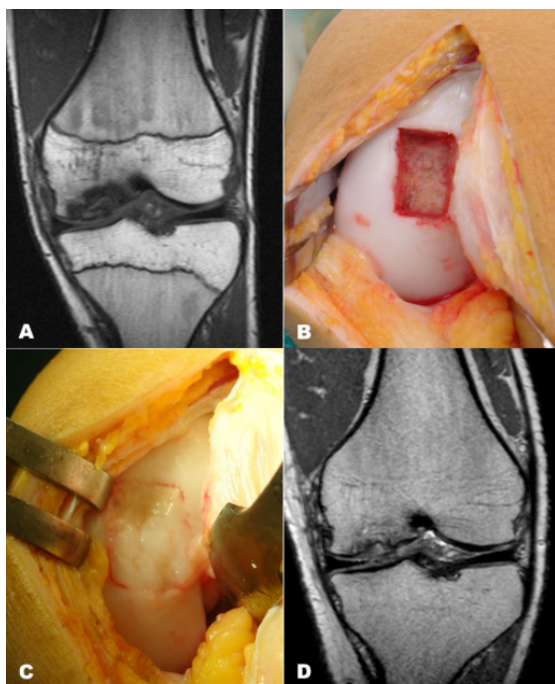


*Mary Hayden and Brad Yoo prepping for the eclipse*

## **Treatment of unstable knee osteochondritis dissecans in the young adult: results and limitations of surgical strategies to address an osteochondral challenge.** Filardo G; Andriolo L; Soler F; Berruto M; Ferrua P; Verdonk O; Rongieras F; Crawford DC.

Joint surface incongruence resulting from osteochondritis dissecans (OCD) alters the articular physiologic congruence, increasing the contact stress on adjacent joint surfaces and accelerating wear and the cascade of joint degeneration. Accordingly, the restoration of articular surface integrity is of major importance, especially in young adults where, in lesions left untreated or following simple fragment excision, early osteoarthritis can be anticipated. Therefore, the treatment algorithm in unstable knee OCD of the young adult foresees surgical options to restore the articular surface. Several procedures have been proposed, including refixation of the detached fragment bone marrow stimulation, osteochondral autograft implantation, fresh osteochondral allograft transplantation, and cell-based or cell-free regenerative techniques. The aim of this review was to summarize the evidence for these surgical strategies, reporting their results and limitations.

The overall evidence documents positive results for each of the assorted surgical procedures applied to treat unstable OCD, thus indicating support for their selected use to treat osteochondral defects paying particular attention to their specific indications for the lesion characteristics. The fixation of a good quality fragment should be pursued as a first option, while unfixable small lesions may benefit from autografts. For large lesions, available cell-based or cell-free osteochondral scaffold are a feasible solution but with limitation in terms of regenerated tissue quality. In this light, fresh allografts may offer articular surface restoration with viable physiologic osteochondral tissue providing a predictably successful outcome, and therefore they may currently represent the most suitable option to treat unstable irreparable OCD lesion in young adults.



*Images of a young male adult with osteochondritis dissecans. Pre (A), Intra (B, C) and Post (D) operatively. A) Coronal plane MRI of the medial femoral condyle documenting a large OCD lesion, B) Intra-articular view of defect site preparation with vertical shoulders to host the scaffold. C) The defect is filled with the osteochondral scaffold, properly sized and implanted press-fit, with further fixation by applying fibrin glue. D) Coronal plane MRI documenting the imaging results of the implant at 2 years of follow-up.*

## **Non-syndromic mitochondrial myopathy in a female collegiate basketball player.** Zusman NL; Novak MA.

### **INTRODUCTION**

Exercise intolerance is a defining feature of mitochondrial myopathies (MM), which are difficult to diagnosis given the phenotypic heterogeneity. Advances in diagnostic modalities might be contributing to the rising prevalence. We present a case of non-syndromic mitochondrial myopathy in a female collegiate basketball player.

### **CASE REPORT**

A 19-yr-old female collegiate basketball player initially presented with new-onset headaches, myalgia, fatigue and rash that intermittently appeared after the cessation of strenuous exercise. Over a several year period, symptoms grew to include bilateral calf swelling, two documented episodes of rhabdomyolysis with elevated creatine kinase, and increasing exercise intolerance to the extent that symptoms recurred after any physical activity. An extensive diagnostic workup was done, including autoimmune laboratory investigations, head and spine imaging, muscle biopsy, initial and follow-up human performance laboratory tests. Human performance laboratory testing included exercise pulmonary spirometry, exercise stress echocardiogram, and non-ischemic forearm testing. Testing revealed nonspecific pathologic changes in muscle fibers, and elevations in lactic acid and ammonia with exercise. Autoimmune testing demonstrated a weakly positive anti-nuclear antibody. Given the constellation of findings, the patient was diagnosed with non-syndromic mitochondrial myopathy. A treatment plan of vitamin and mineral supplements, dietary recommendations, a strict sleep regimen, and exercise prescription was initiated.

### **DISCUSSION**

Mitochondrial myopathies pose a challenge for physicians given the phenotypic variability, thus necessitating a high level of clinical suspicion in order to pursue the multimodal diagnostic evaluation. Once a diagnosis is made, there are no disease-modifying medications for patients, so the goals of treatment are symptom management and prevention of complications. There is a paucity of preexisting literature to guide the management of athletes with recurring symptoms, such as demonstrated by our patient.

**Magnetic resonance imaging validation of tibial tubercle transfer distance in the Fulkerson osteotomy: a clinical and cadaveric study.** Liu JN; Mintz DN; Nguyen JT; Brady JM; Strickland SM; Shubin Stein BE. *Arthroscopy* 2018;34(1):189-197.

### PURPOSE

To validate the medialization and anteriorization distances, and the osteotomy angle of anteromedialization tibial tubercle osteotomies using postoperative axial imaging.

### METHODS

From March 2004 to August 2015, 117 consecutive patients who underwent anteromedialization osteotomies of the tibial tubercle by a single surgeon were identified. Only patients with pre- and postoperative magnetic resonance imaging (MRI) studies were included. Using MRI multiplanar reformats, distances that the tibial tubercle was translated medially (medialization) and anteriorly (anteriorization) were measured. In addition, the osteotomy angle was measured on the postoperative MRI. The measured values were compared with intraoperative estimates. Tibial tubercle osteotomies were then performed on 3 cadaveric knee specimens and imaged with pre- and postprocedure MRIs to correlate intraoperative measurements with MRI findings.

### RESULTS

A total of 40 patients (41 knees) (34.2%) had both pre- and postoperative MRIs and were included. Compared with intraoperative assessment, MRI measured medialization values average 94.7% (standard deviation [SD] 37.7) of dictated values ( $P = .1$ ). MRI measured anteriorization averaged less than half of dictated values (48.9%, SD 18.2%,  $P < .0001$ ). MRI measured osteotomy angles averaged 67.2% of dictated values (SD 50.3%,  $P < .0001$ ). The steepest osteotomy angle that could be performed without violating the posterior cortex and/or endangering the posterior neurovascular structures was 46.3°.

### CONCLUSIONS

Surgeons often overestimate both the anteriorization distance and the osteotomy angle in anteromedialization tibial tubercle osteotomies. The steepest osteotomy angle is less than the 60° described in the literature. Modifications should be considered when more anteriorization is desired with tubercle transfers.

**Return to activities after patellofemoral arthroplasty.** Shubin Stein BE; Brady J; Grawe B; Tuakli-Wosornu Y; Nguyen JT; Wolfe E; Voigt M; Mahony G; Strickland S. *American Journal of Orthopedics* 2017;46(6):E353-E357.

Patellofemoral arthroplasty (PFA) is used to treat isolated patellofemoral arthritis, but little is known about post-PFA activity levels and functional outcome scores. We reviewed 48 consecutive cases (39 patients) of PFAs performed between 2009 and 2014. Three validated patient-reported outcome measures (Kujala score, Lysholm score, International Knee Documentation Committee score) were used to evaluate knee function before and after surgery. Patient-reported outcome measures were significantly improved after

surgery. Return to previous preferred activity was reported by 72.2% of patients, and 52.8% of patients reported returning to the same activity level or to a higher level. Historically, the literature evaluating knee arthroplasty outcomes has focused on implant survivorship, pain relief, and patient satisfaction. Our findings show that patients who undergo PFA have a high rate of return to their preferred activities. These findings can be used to inform patients who want to remain active after PFA.

## **Efficacy of fresh osteochondral allograft transplantation in the knee for adults forty years and older.** Robinson KS; Crawford DC.

### **PURPOSE**

Determine efficacy of Fresh Osteochondral Allograft (FOCA) transplantation in patients older than 40, in comparison to a cohort 39 and younger.

### **STUDY DESIGN**

Cohort study; Level of evidence, 3.

### **METHODS**

We utilized an IRB approved prospective database of 118 consecutive patients, with baseline patient reported outcome data receiving FOCA transplantation to the knee from a single surgeon practice over 8 years (March 2007-July 2015) at a single academic hospital. Eighty patients (68%) completed a minimum of 12 month follow-up and were categorized into two cohorts based on age at surgery.

### **RESULTS**

The study group consisted of 38 patients, 10 women and 28 men, with a mean age of 52 years (range; 40-69) and average final up of 3.4 years (range; 1.0-10.0). The control group consisted of 42 patients, 27 men and 15 women, with a mean age of 27 years (range; 15-39) and average final follow up of 2.7 years (range; 1.0-9.0). A statistically significant improvement in the study group from baseline to final follow-up ( $p < 0.02$ ) was seen for all five KOOS subscores (Symptom: + 8.3, Pain: +11.3, ADL: +14.5, Sports: +20.5, QOL: +25.8) and IKDC (+21.6). Similarly, a statistically significant improvement in the control group from baseline to final follow-up ( $p < 0.02$ ) was seen for all five KOOS subscores; (Symptom: +9.8, Pain: +13.0, ADL: +9.6, Sports: +19.9, QOL: +23.1) and IKDC (+19.8). In the study group, the maximum improvements (118% of baseline, 66% of baseline) were seen in the KOOS QOL

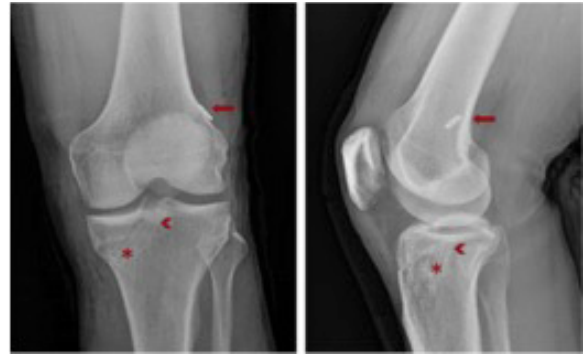
and Sports, respectively. Similar changes in the control group included 94% improvement from baseline KOOS QOL and 50% for Sports. Despite this, there was no significant difference between the two groups with respect to any average KOOS or IKDC score, at any time during the observation period.

### **CONCLUSION**

There was significant improvement of all measured outcomes for both cohorts, with no significant difference between the groups at final follow up. Efficacy of FOCA transplantation in adult's  $\geq 40$  years is similar to younger adults and benefits are greatest for KOOS Sports and Quality of Life.

### Technique for arthroscopic-assisted primary anterior cruciate ligament reconstruction using doubled tibialis anterior tendon. Rose M; Crawford D. *Arthroscopic Techniques* 2017;6(1):e7-e92.

Advances in surgical technique and our knowledge of anterior cruciate ligament (ACL) anatomy have resulted in a marked increase in options for ACL reconstruction. Currently, patient age and activity level, surgeon preference and experience, and cost are factors influencing the type of reconstruction recommended to address knee instability. We present a simplified transtibial method of ACL reconstruction using a single-bundle, doubled tibialis anterior allograft. This method uses fixation with a suspensory device on the femur and a bio-composite interference screw on the tibia. We recommend this simplified technique for primary ACL reconstruction because it minimizes total steps, thus limiting variance, maximizing efficiency, and reducing potential technical error.



Postoperative anteroposterior and lateral radiographs of the knee after ACL reconstruction. The tibial tunnels (chevrons) are visualized, and the EndoButton (arrows) is seated in the appropriate position on the lateral femoral cortex. The interference screw (asterisks) can be visualized in the posterior aspect of the tibial tunnel.

### Incidence of spinal epidural lipomatosis in patients with spinal stenosis. Malone JB; Bevan PJ; Lewis TJ; Nelson AD; Blaty DE; Kahan ME. *Journal of Orthopaedics* 2017;15(1):36-39.

#### BACKGROUND

Spinal Epidural Lipomatosis (SEL) is believed to be a rare disorder. The incidence and prevalence of clinically symptomatic SEL in patients with spinal stenosis has never been reported in the literature. Our study aim was to determine the prevalence, incidence, and associated risk factors of SEL in patients with the diagnosis of spinal stenosis.

#### METHODS

This was a retrospective study. We reviewed the charts of 831 patients with the diagnosis of spinal stenosis over a 30 month period. All patients had spinal MRIs. Grading of SEL was performed using the Borré method.

#### RESULTS

52 patients (21 female and 31 male) had symptomatic moderate and severe SEL. We found a prevalence of 6.26% and an annual incidence of 2.5%. SEL was most commonly seen at L5-S1 level. 27% had received corticosteroids. All SEL patients were overweight and 79% were obese.

#### CONCLUSION

SEL is not uncommon in patients with spinal stenosis. SEL should be considered as a possible diagnosis in those with symptoms of spinal stenosis especially in those with associated risk factors.



**Allograft maturation after reconstruction of the anterior cruciate ligament is dependent on graft parameters in the sagittal plane.** Rose M; Crawford D. *Orthopaedic Journal of Sports Medicine* 2017;5(8); 2325967117719695.

## BACKGROUND

Allograft healing (ligamentization) after reconstruction of the anterior cruciate ligament (ACL) is dependent on multiple factors, including tissue processing, host biologic environment, and biomechanical stressors. Magnetic resonance imaging (MRI) can be used to assess graft maturation after ACL reconstruction.

## HYPOTHESIS

A significant difference will exist in the MRI analysis between 2 distinct allograft constructs. Specifically, the MRI signal-to-noise quotient (SNQ) value will be smaller in quadrupled hamstring tendon (HT) allografts compared with doubled tibialis anterior (TA) allografts due to the difference in graft geometry (surface area-to-volume ratio).

## STUDY DESIGN

Cohort study; Level of evidence, 2.

## METHODS

Prospectively collected data from a subset of patients who participated in a randomized controlled trial at a single center from July 2010 to April 2012 were reviewed. Patients underwent ACL reconstruction using either HT or TA allografts. Six months postoperatively, 32 patients underwent noncontrast MRI to assess ligamentization. The SNQ was calculated for the allograft using sagittal noncontrast T2-weighted MRI as follows:  $SNQ = (S_{\text{graft}} - S_{\text{quadriceps}}) / S_{\text{background}}$ . Graft properties including sagittal and coronal angle as well as tibial and femoral tunnel location were measured. All participants completed validated patient-reported outcome measures preoperatively and at 2 years postoperatively.

## RESULTS

The mean MRI SNQ for the HT and TA allografts was  $2.56 \pm 2.41$  and  $3.15 \pm 3.38$ , respectively ( $P = .57$ ). For the entire group, there was a significant correlation between MRI SNQ and both sagittal graft angle ( $P = .02$ ) and sagittal tibial tunnel position ( $P < .001$ ). We did not find a significant correlation between the tibial tunnel location in the coronal plane, coronal graft angle, or location of the femoral tunnel and the MRI SNQ.

## CONCLUSION

Allograft ligamentization 6 months postoperatively, as assessed by MRI, is dependent on position of the tibial tunnel in the sagittal plane as well as sagittal graft orientation. We did not detect a difference in graft maturation at 6 months between the tibialis anterior and hamstring tendon allografts. This is the only study to our knowledge that directly compares quadrupled HT allografts and doubled TA allografts using postoperative MRI.

**The effect of menstrual cycle and contraceptives on ACL injuries and laxity: a systematic review and meta-analysis.** Herzberg S; Motu'apuaka ML; Lambert W; Fu R; Brady J; Guise J-M. *Orthopaedic Journal of Sport Medicine* 5(7); 2017: 2325967117718781.

## BACKGROUND

Women are at substantially greater risk for anterior cruciate ligament (ACL) injuries than are men.

## PURPOSE

To conduct a systematic review and meta-analysis of the literature to clarify the effect of the menstrual cycle and contraceptives on the laxity of and noncontact injuries to the ACL.

## STUDY DESIGN

Systematic review; Level of evidence, 4.

## METHODS

Searches were conducted using MEDLINE (1946–August 2016), the Cochrane Library Database, clinical trial registries, and related reference lists. Search terms included athletic injuries, knee injuries, ligaments, joint instability, menstrual cycle, ovulation, hormones, and contraceptives. Investigators independently dually abstracted and reviewed study details and quality using predefined criteria and evaluated overall strength of evidence using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) criteria.

## RESULTS

Twenty-one studies totaling 68,758 participants were included: 5 on the menstrual cycle and ACL injury, 7 on hormonal contraceptives and ACL injury, as well as 13 on menstrual cycle and ligament laxity. Four of 5 studies of women not using hormonal contraception indicated that the luteal phase was the least associated with ACL injuries. The 2 largest and highest quality studies on hormonal contraceptives suggested that hormonal contraceptives may be protective

against ACL injury. Six of 12 studies on ACL laxity provided quantitative data for meta-analysis, finding significantly increased laxity during the ovulatory phase compared with the follicular phase.

## CONCLUSION

The literature suggests an association between hormonal fluctuations and ACL injury. Recent studies have suggested that oral contraceptives may offer up to a 20% reduction in risk of injury. The literature on ACL injuries and the menstrual cycle has more than doubled over the past decade, permitting quantitative analysis for the first time. However, the overall strength of this evidence is low. Promising potential directions for future research include long-term observational studies with ongoing hormonal assays and large interventional trials of follicular suppression, including newer hormonal methods.

**Concussion as a multi-scale complex system: an interdisciplinary synthesis of current knowledge.** Kenzie ES; Parks EL; Bigler ED; Lim MM; Chesnutt JC; Wakeland W. *Frontiers in Neurology* 2017;8;513.

Traumatic brain injury (TBI) has been called “the most complicated disease of the most complex organ of the body” and is an increasingly high-profile public health issue. Many patients report long-term impairments following even “mild” injuries, but reliable criteria for diagnosis and prognosis are lacking. Every clinical trial for TBI treatment to date has failed to demonstrate reliable and safe improvement in outcomes, and the existing body of literature is insufficient to support the creation of a new classification system. Concussion, or mild TBI, is a highly heterogeneous phenomenon, and numerous factors interact dynamically to influence an individual's recovery trajectory. Many of the obstacles faced in research and clinical practice related to TBI and concussion, including observed heterogeneity, arguably stem from the complexity of the condition itself. To improve

understanding of this complexity, we review the current state of research through the lens provided by the interdisciplinary field of systems science, which has been increasingly applied to biomedical issues. The review was conducted iteratively, through multiple phases of literature review, expert interviews, and systems diagramming and represents the first phase in an effort to develop systems models of concussion. The primary focus of this work was to examine concepts and ways of thinking about concussion that currently impede research design and block advancements in care of TBI. Results are presented in the form of a multi-scale conceptual framework intended to synthesize knowledge across disciplines, improve research design, and provide a broader, multi-scale model for understanding concussion pathophysiology, classification, and treatment.

**Acute concussion.** King LA; Mancini M; Fino PC; Chesnutt J; Swanson CW; Markwardt S; Chapman JC. *Annals of Biomedical Engineering* 2017;45(9);2135-2145.

Balance assessment is an integral component of concussion evaluation and management. Although the modified balance error scoring system (mBESS) is the conventional clinical tool, objective metrics derived from wearable inertial sensors during the mBESS may increase sensitivity in detecting subtle balance deficits post-concussion. The aim of this study was to identify which stance condition and postural sway metrics obtained from an inertial sensor placed on the lumbar spine during the mBESS best discriminate athletes with acute concussion. Fifty-two college athletes in the acute phase of

concussion and seventy-six controls participated in this study. Inertial sensor-based measures objectively detected group differences in the acutely concussed group of athletes while the clinical mBESS did not ( $p < 0.001$  and  $p = 0.06$ , respectively). Mediolateral postural sway during the simplest condition of the mBESS (double stance) best classified those with acute concussion. Inertial sensors provided a sensitive and objective measure of balance in acute concussion. These results may be developed into practical guidelines to improve and simplify postural sway analysis post-concussion.

## **Osteochondritis dissecans of the knee: etiology and pathogenetic mechanisms. A systematic review.** Reale D; Andriolo L; Zaffagnini S; Filardo G; Crawford D; Candrian C; Cavicchioli A.

### **OBJECTIVE**

The purpose of this manuscript is to analyze the evidence regarding etiopathogenesis of knee Osteochondritis Dissecans (OCD) lesions through a systematic review, so to summate the current understanding of the origin and progression of this pathologic articular processes.

### **DESIGN**

A systematic review of the literature was performed on the PubMed and Cochrane databases on October 2017 by two independent authors and included all levels of evidence. This included all English language literature, pertaining specifically to etiopathology of knee OCD with exclusions for review articles and expert opinion. Of 965 identified records, 154 full-text articles were assessed for eligibility and 86 studies met the inclusion criteria.

### **RESULTS**

According to these studies the etiology of OCD can be of a biological or mechanical origin: 40 articles proposed a biological hypothesis, including genetic causes (27), ossification center deficit (12) and endocrine disorders (9); conversely, 52 articles supported a mechanic hypothesis, including injury/overuse (18), tibial spine impingement (5), discoid meniscus (16) and biomechanical alterations (20) as the cause of the onset of OCD. The pathogenic processes were investigated by 36 of these articles, with a focus on subchondral bone fracture and ischemia as the ultimate events leading to OCD.

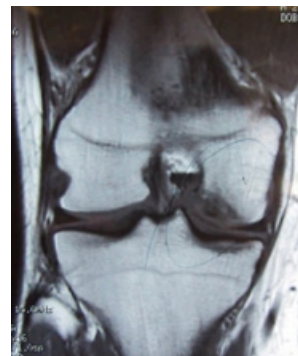
### **CONCLUSIONS**

Biological and mechanical factors are found to result in subchondral bone remodeling alterations, acting independently or more likely

synergically in the progression of knee OCD. The resultant subchondral bone ischemia and/or fracturing appears to determine the onset and progression of OCD.



*Figure A – Recommended “Notch view” standing-rays showing massive lateral femoral condyle OCD*



*Figure B - Coronal FSE weighted MRI of medial femoral condyle OCD in the “classic” location at the lateral cortex adjacent to the PCL*

## **Longitudinal assessment of balance and gait following concussion and return to play in college athletes.** Parrington L; Fino P; Swanson S; Murchison C; Chesnutt J; King L

### **CONTEXT**

Longitudinal studies tracking recovery after concussion often do not consider the timing of return to play (RTP) as a factor within their design, which can limit the understanding of how RTP may affect analysis and resulting conclusions.

### **OBJECTIVE**

To evaluate the recovery of balance and gait in concussed athletes using a novel linear mixed-model design that allows an inflection point to account for changes in trend that may occur following RTP.

### **DESIGN**

Longitudinal, Cohort

### **SETTING**

University athletics departments, applied field setting

### **PATIENTS OR OTHER PARTICIPANTS**

Twenty-three concussed (22% female, 20.1±1.3 years) and 25 healthy controls (24% female, 20.9±1.4 years) were analyzed. Participants were referred by their team sport athletic trainer.

### **INTERVENTION(S)**

None.

### **MAIN OUTCOME MEASURE(S)**

Measures included the Balance Error Scoring System (BESS) total score, sway (instrumented, root mean square of mediolateral sway), single-task gait speed, gait speed while simultaneously reading a handheld article, dual-task cost of reading on gait speed (DTC-G), and dual-task cost of walking on reading (DTC-R).

### **RESULTS**

No significant findings were revealed for the BESS. Instrumented sway was worse in concussed and a change in the recovery trend occurred following RTP (effect of group and time, group\*time and group\*RTP change interactions,  $p \leq 0.027$ ). No initial between-group differences were found for single- or dual-task gait. Both groups increased gait speed initially, and then levelled off following the average RTP date (effects of time and RTP change, and positive group\*time interactions for both conditions,  $p \leq 0.042$ , and a group\*RTP change interaction also for single-task gait speed,  $p=0.005$ ). No significant results were present for DTC-G or DTC-R.

### **CONCLUSIONS**

Changes in the rate of recovery were coincident with the timing of RTP. While this study is unable to suggest these changes were a result of athletes returning-to-play, these findings prompt further research evaluating the effects of RTP on concussion recovery.



**Wearable inertial sensors allow for quantitative assessment of shoulder and elbow kinematics in a cadaveric knee arthroscopy model.** Rose M; Curtze C; O'Sullivan J; El-Gohary M; Crawford D; Friess D; Brady JM. *Arthroscopy* 2017;33(12):2110-2116.

## PURPOSE

To develop a model using wearable inertial sensors to assess the performance of orthopaedic residents while performing a diagnostic knee arthroscopy.

## METHODS

Fourteen subjects performed a diagnostic arthroscopy on a cadaveric right knee. Participants were divided into novices (5 postgraduate year 3 residents), intermediates (5 postgraduate year 4 residents), and experts (4 faculty) based on experience. Arm movement data were collected by inertial measurement units (Opal sensors) by securing 2 sensors to each upper extremity (dorsal forearm and lateral arm) and 2 sensors to the trunk (sternum and lumbar spine). Kinematics of the elbow and shoulder joints were calculated from the inertial data by biomechanical modeling based on a sequence of links connected by joints. Range of motion required to complete the procedure was calculated for each group. Histograms were used to compare the distribution of joint positions for an expert, intermediate, and novice.

## RESULTS

For both the right and left upper extremities, skill level corresponded well with shoulder abduction-adduction and elbow pronosupination. Novices required on average 17.2° more motion in the right shoulder abduction-adduction plane than experts to complete the diagnostic arthroscopy ( $P=0.03$ ). For right elbow pronosupination (probe hand), novices required on average 23.7° more motion than experts to complete the procedure ( $P=0.03$ ). Histogram data showed novices had markedly more variability in shoulder

abduction-adduction and elbow pronosupination compared with the other groups.

## CONCLUSIONS

Our data show wearable inertial sensors can measure joint kinematics during diagnostic knee arthroscopy. Range-of-motion data in the shoulder and elbow correlated inversely with arthroscopic experience. Motion pattern-based analysis shows promise as a metric of resident skill acquisition and development in arthroscopy.

## CLINICAL RELEVANCE

Wearable inertial sensors show promise as metrics of arthroscopic skill acquisition among residents.

**Rehabilitation and postoperative management practices after osteochondral allograft transplants to the distal femur: a report from the Metrics of Osteochondral Allografts (MOCA) study group 2016 survey.** Kane MS; Lau K; Crawford DC. *Sports Health* 2017;9(6):555-563.

### BACKGROUND

We present the current spectrum of postoperative management practices for patients receiving distal femur osteochondral allograft (OCA) transplants.

### METHODS

Evidence Acquisition: The Joint Restoration Foundation database was examined in cooperation with the Metrics of Osteochondral Allografts study group to identify 121 surgeons who had performed at least 1 OCA transplant in the past year; 63% of surgeons responded.

### RESULTS

Postoperative weightbearing restrictions ranged from immediate nonweightbearing with full weightbearing by 12 weeks to immediate weightbearing as tolerated. Most surgeons who performed fewer (<10) OCA transplants per year followed the most restrictive protocol, while surgeons who performed more (>20) OCA

transplants per year followed the least restrictive protocol. One-third of surgeons with the most restrictive protocol were more likely to change their protocol to be less restrictive over time, while none of those with the least restrictive protocol changed their protocol over time. Fifty-five percent of surgeons permitted return to full activity at 26 weeks, while 27% of surgeons lifted restrictions at 16 weeks.

### CONCLUSIONS

Characterization of the spectrum of postoperative management practices after OCA transplantation provides a foundation for future investigations regarding patient outcomes and associated cost to establish best practice guidelines. Fundamentally, surgeons with more experience with this procedure tended to be more aggressive with their postoperative rehabilitation guidelines. Most commonly, rehabilitation provided for some degree of limited weightbearing; however, the spectrum also included immediate full weightbearing practices.

**Harms technique multi-surgeon complication rate.** O'Toole T; Radoslovich S; Chang J; Yoo J.

### INTRODUCTION

The atlantoaxial arthrodesis technique described by Goel and Harms is favored for its low-risk profile to critical neurovascular structures. While most Harms technique case series detail one surgeon's experience, this study reports the complication rate of 19 surgeons with varying backgrounds and training.

### METHODS

A retrospective analysis was performed of patients undergoing Harms fixation by 19 surgeons, 10 of whom had dedicated spine fellowship training. Complications included: radiographic non-union, implant failure, wound complications, and post-surgical C2 neuralgia.

### RESULTS

Of 92 patients, 17 suffered complications (18.5%). Each surgeon completed between one and 16 surgeries, with a 7.4% complication rate for fellowship-trained surgeons and a 34.2% complication rate for non-fellowship-trained surgeons. Major complications included 8 pseudarthroses, 6 wound complications, and 7 cases of occipital neuralgia. 9.8% required revision operations.

### CONCLUSION

The complication rate of Harms arthrodesis for fellowship-trained surgeons was significantly lower than those without fellowship training.

## **Acute concussions best identified using a wearable inertial sensor in a single test position compared to standard mBESS test.** Chesnutt J; Mancini M; Fino PC; Chapman J; Swanson CW; Markwardt S; King LA.

### **INTRODUCTION**

Balance assessment is an integral part of sports-related concussion management. The modified Balance Error Scoring System (mBESS) is a standard clinical tool, but metrics from inertial sensors may increase sensitivity of identifying concussions.

### **AIM**

To identify which conditions and sway metrics from an inertial sensor during the mBESS more objectively identify acutely concussed athletes.

### **SUBJECTS**

128 collegiate athletes (52 concussed and 76 non- concussed). Concussions are all sports-related and diagnosed and managed by the university team AT and team doctor.

### **TESTING PROCEDURE**

Balance was tested during the mBESS with a single inertial sensor (Opal) around the waist, approximately 2 days after concussion. Sway metrics were calculated with Mobility Lab

(APDM) software based on the acceleration signals from the lumbar sensor.

### **RESULTS**

Inertial sensor-based sway measures during a single quiet standing position could objectively detect group differences in the acutely concussed group of athletes while the standard mBESS could not ( $p = 0.001$  vs  $0.06$ ).

### **DISCUSSION**

Sensor-based balance measures outperform modified Balance Error Scoring System in identifying acute concussions. Postural sway in the ML direction was found to be more sensitive than standard anteroposterior (AP) measures. Measuring postural sway with inertial sensors in the simplest condition of double stance during the mBESS was best able to identify those with acute concussion, resulting in shorter, easier and more objective balance testing protocols. These results provide practical guidelines for use of inertial sensors in balance assessment for sports-related concussion.

## **Calcaneal tuberosity fractures through prior Schanz pin sites in patients with diabetic neuropathy.** Ramsey DC; Laursen RK; Meeker JE; Yoo BJ.

### **BACKGROUND**

Schanz pin placement in the calcaneus is a frequently performed procedure, with placement of an ankle-spanning external fixator being a typical indication. Pin placement is generally dictated by efforts to avoid the medial neurovascular structures.

### **CASES**

Presented here are three diabetic patients

without Charcot arthropathy who sustained a calcaneal tuberosity fracture through a prior Schanz pin site. This was done despite optimal placement with respect to neurovascular structures.

Recognition of this potential complication is relevant for both pre-operative risk counseling as well as for consideration of weight-bearing restrictions post-operatively.

## Effect of protected weight-bearing on step count using commercial accelerometers.

Lieberman E; Mast L; Tryvette K; Gundle K; Doung YC.

### BACKGROUND

Commercial accelerometers are widely used to monitor activity in research and everyday life, however they are only valid for use with normal gait. Patients undergoing orthopaedic surgery often require protected weightbearing restrictions and it is currently unknown what effect these restrictions have on accelerometer's ability to accurately measure activity. Our aim was to determine the accuracy of commercial accelerometers are in measuring step count and activity in subjects with lower extremity weight-bearing restrictions.

### METHODS

Ten adult volunteers were instructed on full weight-bearing (WB), two-point partial weight-bearing (PWB), and two-point non-weight-bearing (NWB) gaits. Three accelerometers were worn: Fitbit One (Fitbit), Omron Alvita Pedometer (Omron), and Pedometer++ free application for iPhone 6 (App). Participants took 50 steps following each of the three weightbearing restrictions and the number of steps recorded by each accelerometer was measured. Descriptive analysis and Kruskal-Wallis rank sum test were performed to determine difference in step count by accelerometer type and gait type.

### RESULTS

The average number of steps measured using the Fitbit for WB, PWB, and NWB was 50.4, 20.1, and 41.2 respectively; using the Omron was 50.5, 4.6, and 20.8, and using the App was 50.6, 31.1, and 41.2. There was no difference in average step count between devices with WB gait. PWB gait averaged fewest steps counted with all accelerometers, which was significantly less than WB ( $p < 0.05$ ). In PWB and NWB gait, the average number of steps was less in the Omron group compared to the Fitbit and App groups ( $p < 0.05$ ).

### CONCLUSIONS

There were consistent differences in the number of steps tracked when weight-bearing was restricted, suggesting the difference is dependent on type of gait as well as type of accelerometer. This data can be used to guide future studies focusing on incorporating accelerometers into monitoring rehabilitation and post-operative progress in patients who require weight-bearing restrictions.

**Driving after musculoskeletal surgery of the upper extremity.** Lieberman E; Green N; Nazir O; Thompson A; Mirarchi A.

## BACKGROUND

There is no standard time to return to driving following musculoskeletal surgery of the upper extremity (UE). We hypothesized that having surgery requiring casting or splinting, surgery of the right upper extremity, and surgery performed proximal to the wrist will lead to delayed return to driving after surgery.

## METHODS

An 8-item survey asking about driving habits after surgery was administered to patients in a post-operative clinic setting from February 2017-January 2018. Patients were included if they underwent musculoskeletal surgery of the upper extremity, which included any procedure from the glenohumeral joint to distal phalanx. The survey was given approximately 6 weeks from the date of index procedure. Patient demographics were recorded from the electronic medical record. Descriptive statistics (mean and median for continuous variables) were used as well as Kruskal-Wallis, and Mann-Whitney U tests, which were performed using Microsoft Excel Software (Microsoft Corp. Redmond, WA).

## RESULTS

71 patients completed the survey and were included in the study. Time to return to driving ranged from 0-70 days with a mean of 15 days and median of 7 days. There was no difference in time to return to driving in patients wearing a splint versus no splint ( $P=0.4494$ ). Likewise, laterality of UE procedure did not influence time to return to driving ( $P=0.3184$ ). Finally, when comparing return time to driving with location of surgery, there was no difference between shoulder, elbow wrist, or hand surgery ( $p=0.1569$ ).

## CONCLUSIONS

Many patients query when they can return to driving after surgery and currently there are no evidence based recommendations to guide this discussion. In our study, the mean time to return to driving was 15 days, with a median of 7 days. We found no differences in time to return to driving in patients wearing a splint vs no splint post op, no difference based on laterality of procedure, and no difference based on location of surgical procedure. This information can be used to guide recommendations regarding return to driving following upper extremity surgery.



## **A novel technique for olecranon osteotomy in the treatment of distal humerus fractures.**

Ramsey DC; Thompson A; Nazir O; Mirarchi A.

### **BACKGROUND**

Olecranon osteotomy is a commonly used method for obtaining adequate exposure of the articular surface in complex distal humerus fractures. We describe a novel technique whereby a pre-contoured olecranon plate is first fixed to the olecranon, and a Gigli saw is used to perform the osteotomy while the plate is in place.

### **METHODS**

A standard posterior approach to the olecranon is done. After osteotomy is made, the plate is then removed from the distal fragment only, and the proximal fragment is then elevated to expose the joint.

A pre-contoured olecranon plate is then applied to the olecranon and affixed with screws both proximal and distal to the planned osteotomy site. A curved hemostat is then introduced anterior to the olecranon and used to pass a Gigli saw. This is then used to create the osteotomy through the bare area of the sigmoid notch. At this point the screws fixing the plate distal to the osteotomy site are removed. The proximal olecranon fragment with plate attached is retracted proximally with the extensor mechanism to expose the distal humerus fracture. After repair of the distal humerus itself the olecranon osteotomy fragments are re-approximated, and the plate is fixed to the distal fragment using standard small frag screws.

QuickDASH (Disabilities of the Arm, Shoulder and Hand) and VR-12 (Veterans RAND 12-item Health Survey) scores were collected on all patients treated with the technique. Similar data was collected on the most recent 5 patients with distal humerus fractures treated with the standard chevron osteotomy method.

### **RESULTS**

All five patients went on to radiographic and clinical union of the osteotomy site. QuickDASH, VR-12 physical, and VR-12 mental scores were not significantly different from patient in the chevron osteotomy group ( $p = 0.93, 0.79, 0.68$ , respectively; t-test).

### **CONCLUSIONS**

This method provides excellent visualization of the joint, is less technically challenging than the standard chevron osteotomy, and saves significant time at the end of the case when fixation of the olecranon osteotomy is required. It further guarantees anatomic reduction as the plate is placed before the osteotomy is performed. It has obtained osteotomy union in all cases as well as functional outcomes (QuickDASH, VR-12) comparable to those attained with the chevron technique.

**Waddell signs are correlated with insurance and employment.** Radoslovich S; Haag C; Carlson H; Carlson N; Yoo J.

## INTRODUCTION

Waddell signs, introduced to represent “non-organic” low back pain, are now understood to represent centrally sensitized pain. The relationship between Waddell signs, insurance, and employment status was examined.

## METHODS

This prospective cross-sectional study included 462 outpatients seen over one year. Subjects underwent Waddell examinations and medical records were extracted for age, sex, employment, and insurance status. The presence of 1+ and 3+ Waddell signs were compared by insurance and employment status.

## RESULTS

Non-working subjects under 65 had a higher prevalence of 1+ and 3+ Waddell signs (43% and 20%) than employed (24% and 7%) and retired subjects (14% and 4%). Medicaid subjects had a higher prevalence of 1+ and 3+ Waddell signs (64% and 28%) than private insurance (22% and 9%) and Medicare subjects (19% and 5%). A co-analysis found employment, not Medicaid, status significant.

## DISCUSSION

Non-working working age patients have a higher prevalence of Waddell signs than those working or retired.

**Sporadic intradural extramedullary hemangioblastoma of the cauda equina: case report and literature review.** Blaty D; Malos M; Palmrose T; McGirr S. *World Neurosurgery* 2018;109:436-441.

## BACKGROUND

Spinal hemangioblastomas account for 1%-5% of all spinal cord tumors. Although spinal hemangioblastomas are rare, it is exceedingly rare to have a case of intradural extramedullary hemangioblastoma of the spine, especially in isolation without von Hippel-Lindau syndrome. The purpose of this report is to present a rare case of intradural extramedullary hemangioblastoma of the cauda equina and a literature review.

## CASE DESCRIPTION

An 82-year-old man presented with an intradural mass at the L4 spinal level on magnetic resonance imaging. Given the benign appearance on magnetic resonance imaging and lack of radiculopathy, the decision was made to observe the patient. Over the course of 4 years, the tumor enlarged and caused left lower extremity radicular pain. Posterior laminectomy and tumor excision was performed. Owing to intimate

involvement with multiple nerve roots, subtotal resection was performed. Immunohistopathologic analysis revealed a highly vascular and cellular tumor, with findings consistent with intradural extramedullary hemangioblastoma. The patient ultimately underwent CyberKnife radiosurgery for residual tumor, with improvement in neurologic symptoms. Follow-up studies at 2 years failed to show any tumor growth.

## CONCLUSIONS

Literature review revealed cauda equina intradural extramedullary spinal hemangioblastoma to be a rare diagnosis. Furthermore, this was a sporadic case without associated von Hippel-Lindau syndrome. Only 20 previous cases have been reported. Immunohistopathologic analysis was required to make the diagnosis. Radiosurgery appears to be useful in cases of residual tumor after subtotal tumor resection.

## **What are the rates and regional variability of femoral prophylactic stabilization for metastatic bone disease in the VA Healthcare System?** Summers Z; Philipp T; Doung YC; Hayden J; Gundle K.

### **BACKGROUND**

Metastatic bone disease affects between 280,000-330,000 US citizens and is a significant cause of morbidity and healthcare cost in the United States. The femur is the most common site of metastatic disease and pathologic fracture in the appendicular skeleton. Little is known regarding national rates of prophylactic stabilization, how this rate changes over time, and regional variations in practice. The Veterans Affairs Informatics and Computing Infrastructure (VINCI) Corporate Data Warehouse (CDW) is a comprehensive relational database. It provides a unique platform that effectively addresses limitations of other commonly used administrative databases, which are built primarily for billing. We investigated the overall rate of prophylactic fixation of the femur within the VA healthcare system, and whether that rate is changing over time or varies by geographic region.

### **METHODS**

All veterans who underwent prophylactic stabilization of the femur between October 2010 and September 2015 were retrospectively identified using common procedural terminology codes 27495 or 27181 through the VINCI CDW database. Procedure date, procedure location, and demographic variables were collected, and location subsequently organized into four regions in accordance with the United States Census Bureau: Northeast, Midwest, South, and West. Spearman rank correlation was used for an assessment of trends in the annual rate of stabilization. For potential regional variation, a generalized linear model (GLM) with Poisson distribution was constructed for count data and rate ratios were computed using the Delta method.

### **RESULTS**

During the five-years, 940 prophylactic stabilization procedures were performed --- 1 per 29,000 patients per year. Median age was 65 years (Interquartile range 59-71) and 93% were men. Metastatic kidney, prostate, and lung cancer were the leading underlying diagnoses. Annual rates of prophylactic stabilization did not change over the study period in absolute terms ( $p=0.68$ ) nor when adjusted for population ( $p=0.70$ ).

### **CONCLUSIONS**

This large, national retrospective study of patients covered through the VA demonstrated a stable rate of prophylactic femur stabilization procedures over the 5-year study period. However, we found significant regional variation in practice patterns. There was a two-fold increase in rates of stabilization in some regions over others, which may suggest that surgical indications for prophylactic stabilization of impending fractures differs across the US.

## **Modified single-incision Wiltse approach complications.** Baksh N; Radoslovich S; Yoo J.

### **BACKGROUND**

Wiltse's paraspinal sacrospinalis splitting approach treats lumbar conditions requiring fusion without decompression. Use is limited due to poor cosmesis and potential skin compromise. This abstract describes complications of a modified Wiltse technique using one skin incision and two paraspinal fascial incisions.

### **METHODS**

A retrospective chart review included modified Wiltse patients by one surgeon over 10 years. Complications include seroma, infection, dehiscence and screw misplacement surgery. Age, sex, weight, BMI, levels fused, and revision were analyzed.

### **RESULTS**

Eighty-eight patients underwent modified surgery. One superficial infection required surgical treatment, while one wound dehiscence and two seromas did not. There was no misplaced hardware. One of 15 revisions and three of 73 primary surgeries resulted in complication. One of seven over two-level surgeries and three of 81 one-or-two level surgeries resulted in complication.

### **CONCLUSION**

The modified Wiltse approach resulted in minimal wound complications. This technique can be used safely in both revision and multi-level surgeries.

## **Conscious sedation versus rapid sequence intubation for the reduction of native traumatic hip dislocation.** Bommiasamy A; Opel D; McCallum R; Yonge J; Perl VU; Connelly C; Friess D; Schreiber M; Mullins R.

### **BACKGROUND**

Traumatic hip dislocations (THD) are a medical emergency. This study investigated reduction via primary conscious sedation (PCS) and primary rapid sequence intubation (PRSI).

### **METHODS**

All cases of native THD from 2006-2015 from our institution were reviewed. The primary outcome was successful reduction of the THD.

### **RESULTS**

67 patients had a native THD. 34 (50.7%) patients had successful PCS, 12 (17.9%) failed

PCS and underwent reduction following RSI, 21 (31.3%) underwent PRSI. Patients in the PRSI group were more severely injured. Time to reduction greater than 6 hours was associated with PCS failure (Odds ratio (95% confidence interval) 19.75 (2.06,189.10)  $p=0.01$ ).

### **CONCLUSIONS**

Clinicians treating patients with a THD can utilize either PCS or PRSI with a majority of patients safely reduced under PCS. However, patients whose hip have been dislocated for more than 6 hours are at risk for failure with PCS, and are good candidates for PRSI.

6:45AM

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### Can single-stage revision to oncologic prosthesis salvage the multiply-revised infected total joint arthroplasty? Aultman H; Doung Y-C.



#### Hannah Aultman, MD

Hometown: Portland, OR

Medical School: Tufts University

Fellowship Plans: Hand and Upper Extremity - University of Chicago, Chicago, IL

#### BACKGROUND

For patients with infected total joint arthroplasties that have failed multiple revisions, options short of amputation are limited. The aim of this study was to determine whether single-stage revision to an endoprosthetic replacement (EPR) is a viable limb salvage option for these patients.

#### METHODS

We retrospectively reviewed all total hip and knee arthroplasty patients who had undergone multiple prior revisions for infection who then underwent single-stage revision to EPR. Data collected included indication for revision, number of previous surgeries, comorbidities, organisms identified, and antibiotic course. Outcome measures included complications including need for subsequent operative intervention for infection, need for oral antibiotics, implant survival, mortality, and ambulatory status.

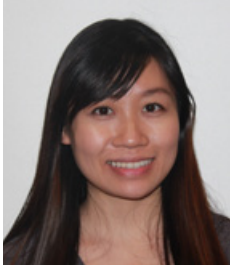
#### RESULTS

Twenty-two EPRs (7 hips and 15 knees) were performed in patients with a mean age of 69.2 years. Twelve of 22 (54.5%) patients required a second or multiple subsequent procedures following their single-stage revision, 5 of 7 (71.4%) of the hips and 7 of 15 (46.7%) of the knees. Limb salvage was achieved for 5 of 7 (71.4%) hips and 11 of 15 (73.3%) knees.

#### CONCLUSION

This study supports the use of single-stage revision to EPR for the infected and multiply-revised total joint arthroplasty patient seeking to avoid amputation.

### The effectiveness of cryotherapy over plaster splints after hand and wrist surgery on reducing pain and skin temperature. Lau K; Thompson A; Nazir O; Mirarchi A.



**Karlee Lau, MD**

Hometown: Plano, TX

Medical School: University of Texas Southwestern

Fellowship Plans: Hand and Upper Extremity - University of Alabama, Birmingham, AL

#### BACKGROUND

Ice is one of the oldest and most prescribed forms of therapy for acute injuries and postoperative wounds. However, its use is largely based on empirical practice without full understanding of its effects. Prior research have shown mixed clinical outcomes with postoperative use of ice. There has been a recent paradigm shift towards abandoning ice for acute musculoskeletal injuries due to its effects on macrophages important for healing. Recent reports of ice-related soft tissue complications have also prompted debate about its risks and benefits. The duration and method of cryotherapy application that achieves effective pain control while minimizing adverse effects on healing or causing hypothermic injury is not clear.

#### AIMS AND HYPOTHESIS

This study aim was to evaluate the effect of cryotherapy on postoperative pain as measured by the visual analog scale (VAS) and narcotic requirement as well as skin temperature changes and total heat exposure under plaster splints after hand and wrist surgery. We hypothesized that applying ice packs over splints postoperatively would not result in a significant difference change in patient pain. Based on our results from a mannequin study, we hypothesized that immediate postoperative application of cryotherapy over plaster wrist splints will have

a significant reduction in skin temperature and total heat exposure.

#### METHODS

This was a prospective, randomized, controlled clinical study. Eligible patients underwent hand and wrist surgery with this study's attending surgeons and subsequently recovered in a wrist or thumb spica splint.

Temperature probes were placed on the volar and dorsal wrist near the incision. Baseline temperatures were measured and recorded two times before splinting. A standardized splint was then applied. After randomization, an ice or sham ice bag was placed over the splint. Skin temperature was then recorded every minute for 60 minutes. VAS rating was obtained every 15 minutes, and narcotics were administered as needed.

Based on pilot research conducted using mannequin arms, a power analysis determined that at least 128 total subjects were required to answer our research questions. A simple t-test was used for statistical analysis, with  $p < 0.05$  indicating statistical significance. Differences in maximum and minimum skin temperatures, calculated total energy exposure, narcotics use, and VAS rating between the two groups was analyzed.

## RESULTS

Preliminary data was analyzed based on 33 subjects – 15 patients were randomized to the control (no ice) group and 18 patients were randomized to the experimental (ice) group. 13 out of 33 patients did not receive peripheral nerve blocks prior to their surgeries – 4 were in the control group and 9 were in the ice group. The analysis included the visual analog scale score and narcotic requirement data for the patients without nerve blocks and excluded subjects who received nerve blocks prior to surgery. In the study period, the ice group had a lower average overall skin temperature range on both the splinted and non-splinted sides of the wrist (27.80-35.14°C, 28.53-32.54°C, respectively) compared to the control group (29.46-38.51°C, 28.65-33.89°C, respectively). Difference between the maximum temperatures of the control and ice groups was statistically significant (averages: 38.51°C and 35.14°C,  $p=0.0005$ ). On average, the splinted side in the ice group reached baseline skin temperatures 51 minutes after splinting while the skin temperature in the control group did not return to baseline within 60 minutes. The splinted side of wrist in the control group was exposed to 51.41 calories of heat while the experimental group was exposed to 20.15 calories for a difference of 31.26 calories ( $p=0.008$ ).

The ice group had a mean VAS of 2 and mean oral morphine equivalent dose of 2.97mg while the control group had a mean VAS of 1 and mean oral morphine equivalent dose of 3.48mg was administered in PACU. The maximum change in VAS (delta VAS) in the study period was 1 point.

## SUMMARY POINTS

The cryotherapy group experienced lower minimum and maximum temperatures after splinting than the control group. The differences in the maximum skin temperature and heat exposure under the splint were statistically significant. Interpretation of pain parameters

requires more data due to smaller number of patients forgoing peripheral blocks. Taking into account the controversy of cryotherapy's effects on healing, it will be important to determine whether ice application makes any significant difference in postoperative outcomes. This information will help establish an evidence-based cryotherapy protocol that includes specific delivery modes and duration of application to maximize the benefits of ice as a treatment modality postoperatively.

**Race and gender influence humerus fracture management.** Opel D; Rapone B; Krishnamoorthy B; Yoo J; Meeker J.



**Dayton Opel, MD**

Hometown: Sheboygan, WI

Medical School: University of Wisconsin

Fellowship Plans: Hand and Upper Extremity - Cleveland Clinic, Cleveland, OH

This study examined the relationship of surgical management of humerus shaft fractures (HSFs) with race, gender, insurance status, and presence of lower extremity fracture in 19,818 patients from the National Trauma Data Bank years 2007–2012. Using a multivariate logistic regression model, black males (OR 0.73, 95% CI 0.66–0.81,  $p < 0.001$ ) and white females (OR 0.85, 95% CI 0.80–0.91,  $p < 0.001$ ) had reduced odds of surgery compared to white males. Insurance status was not significant. Whereas prior studies reported worse outcomes and diminished access to healthcare for blacks compared to whites, this study eliminates access as an issue as the patients are trauma patients who have entered the system. Rather, the issue is solely the management of an acute orthopaedic injury with wide and varied indications for operative and non-operative management. This study demonstrates that disparity related to race and gender exists in orthopaedic care of HSFs. Given the variable indications, and paucity of cases with absolute indications for surgery (i.e., associated vascular injury, floating elbow, etc.), a surgeon can make arguments for or against operative treatment in a majority of cases. Therefore, the disparity may reflect bias in the decision-making process within the treating team.

**When is an orthopaedic intern ready to take call?** Smith D; Barronian T; Jenkins D; Herzka A; Brady J; Friess D.



### Derek Smith, MD

Hometown: Topana, CA

Medical School: Columbia University

Fellowship Plans: Hand Surgery - Mary S. Stern, Cincinnati, OH

### BACKGROUND

While the details of orthopaedic residency training vary among programs, an inevitable and recurrent phenomenon is a transition for interns from consistent oversight to more independent call duties with indirect supervision. As trainees advance from supervised intern duties to the role of junior residents, they are often expected to take call with increased levels of independence. Inability to perform basic procedures can delay patient care and requires mobilizing a more senior on-call team to assist, disrupting schedules and putting training programs at greater risk of duty hour violations. The purpose of this study was to evaluate a novel Orthopaedic Intern Skills Assessment (OISA) and its ability to detect differences in trainee experience levels after the completion of an intern year.

### METHODS

Medical students, incoming interns (pre-interns), and residents within one month of completing intern year (post-interns) were assessed for their ability to complete eleven skills using a dichotomous scale in a simulated environment. The evaluation utilized a combination of a standardized patient and a cadaver leg. Skills assessed were skeletal traction, joint injection and aspiration, laceration repair, ankle brachial index measurement, compartment pressure monitoring,

upper and lower extremity splinting, informed consent, spine trauma exam, and cervical spine clearance. Scoring was completed by attending orthopaedic surgeons, chief residents, and research assistants.



### The utility of obtaining post-mobilization imaging in non-operative pelvic ring injuries.

Winston BA; Sarker M; Putnam D; Gehling P; Eagleton C; Friess D.



#### Benjamin Winston, MD

Hometown: Denver, CO

Medical School: University of Colorado School of Medicine

Fellowship Plans: Arthroplasty – Tahoe Reno Orthopedic Clinic, NV

#### BACKGROUND

Pelvic fractures are a diverse category of injuries with varying degrees of severity, and treatment recommendations are determined by the degree of associated instability. One method to determine treatment for likely stable fracture patterns is to obtain post-mobilization films of the pelvis to assess for occult instability. The purpose of this study was to investigate the utility of routinely obtaining post-mobilization films and to determine how often they alter treatment recommendations.

#### METHODS

Records at a single Level 1 trauma center from January 2007 through December 2014 were retrospectively reviewed and those with CPT and ICD-9 codes for pelvic and acetabular fractures were identified. For those chosen for non-operative treatment at presentation, a detailed chart review was performed to record treatment recommendations and identify those patients that had post-mobilization imaging obtained. Further review of those select patients was then performed to determine if there was a change in treatment recommendations after post-mobilization imaging.

#### RESULTS

1057 patients were identified with an average age of 50 years (std. deviation 20 years; range 18 to 103). 61% were male. The most prevalent mechanism of injury was motor vehicle crash (40%), followed by a fall from height (21%). 50% of the patients presented as trauma activations. Of the 402 patients planned for non-operative treatment at presentation, 192 (48%) had post-mobilization films completed. Three patients underwent surgical stabilization following post-mobilization imaging. Importantly, in all three of these cases chart notes specifically indicated that the decision to proceed surgically was based on the patient's complaint of pain with attempted mobilization and not based on the imaging.

#### CONCLUSIONS

Routinely obtaining post-mobilization imaging for patients with pelvic injuries that have a low likelihood for instability may not be necessary. Eliminating this step would result in lower cost and decreased patient exposure to radiation. We recommend that surgeons base the need for further diagnostic imaging on the patient's clinical progress with weightbearing.

# Resident Directory 2017-2018

OHSU Residents (PGY-1 to PGY-4)

## PGY-4 Class

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**Courtney Bell, MD**

Hometown:  
Roseburg, OR

Medical School:  
OHSU, Portland, OR

Fellowship Plans:  
Adult Reconstruction,  
Rothman Institute,  
Egg Harbor, NJ



**Shanjean Lee, MD**

Hometown:  
Newport Beach, CA

Medical School:  
Duke University,  
Durham, NC

Fellowship Plans:  
General Orthopedics



**Elizabeth Lieberman, MD**

Hometown:  
Lake Oswego, OR

Medical School:  
OHSU, Portland, OR

Fellowship Plans:  
Adult Reconstruction,  
Washington University,  
St. Louis, MO



**Peters Otlans, MD**

Hometown:  
Lakewood, WA

Medical School:  
Boston University,  
Boston, MA

Fellowship Plans:  
Sports Medicine,  
Jefferson University,  
Philadelphia, PA



**Travis Philipp, MD**

Hometown:  
Olathe, KS

Medical School:  
OHSU, Portland, OR

Fellowship Plans:  
Spine, New York  
University, New York, NY

## PGY-3 Class

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**Nikolas Baksh, MD**

Hometown:  
Lancaster, PA

Medical School:  
Case Western  
Reserve University,  
Cleveland, OH



**Taylor Lara, MD**

Hometown:  
Memphis, TN

Medical School:  
University of  
Tennessee, Memphis,  
TN



**David Putnam, MD**

Hometown:  
Santa Cruz, CA

Medical School:  
OHSU, Portland, OR



**Duncan Ramsey, MD**

Hometown:  
Dallas, TX

Medical School:  
University of Texas,  
San Antonio, TX



**Grant Sun, MD**

Hometown:  
Reno, NV

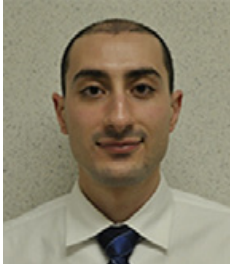
Medical School:  
University of Utah,  
Salt Lake City, UT

# Resident Directory 2017-2018

OHSU Residents (PGY-1 to PGY-4)

## PGY-2 Class

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**Torgom Abraamyan, MD**

Hometown:  
Glendale, CA

Medical School:  
Washington University,  
St. Louis, MO



**Trevor Barronian, MD**

Hometown:  
Seattle, WA

Medical School:  
OHSU, Portland, OR



**Jason Laurita, MD**

Hometown:  
Camden, ME

Medical School:  
Dartmouth Medical  
School, Hanover, NH



**Michael Robbins, MD**

Hometown:  
Paradise, CA

Medical School:  
University of  
California, Davis, CA



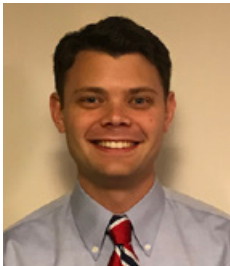
**Sean Sterrenberg, MD**

Hometown:  
Silverton, OR

Medical School:  
University of  
Washington,  
Seattle, WA

## PGY-1 Class

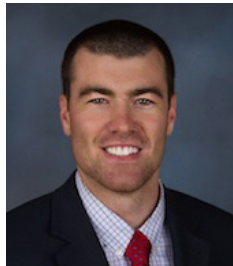
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**Sam Cheesman, MD**

Hometown:  
Muncie, IN

Medical School:  
Indiana University,  
Indianapolis, IN



**Ryan Hadden, MD**

Hometown:  
Salem, OR

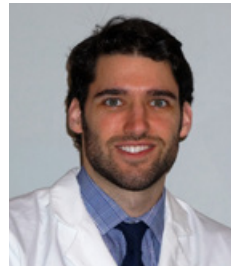
Medical School:  
University of Alabama,  
Birmingham, AL



**Sam Moulton, MD**

Hometown:  
Eugene, OR

Medical School:  
OHSU, Portland, OR



**Erik Woelber, MD**

Hometown:  
Anchorage, AK

Medical School:  
University of  
Washington,  
Seattle, WA



**Natalie Zusman, MD**

Hometown:  
Portland, OR

Medical School:  
OHSU, Portland, OR

# Resident Directory 2017-2018

## Samaritan Health Services Orthopaedic Surgery Residents

### PGY-5 Class

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**Douglas Blaty, DO**

Medical School: Midwestern University (AZCOM), Glendale, AZ

Fellowship Plans: Spine, Twin Cities Spine Center, Minneapolis, MN



**Jun Kim, DO**

Medical School: Western University of Health Sciences, Lebanon, OR

Fellowship Plans: Arthroplasty, Wake Forest, Winston-Salem, NC



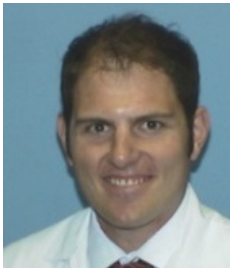
**Stefan Yakel, DO**

Medical School: Midwestern University (AZCOM), Glendale, AZ

Fellowship Plans: Spine, Twin Cities Spine Center, Minneapolis, MN

### PGY-4 Class

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**Tim Degan, DO**

Medical School: Midwestern University (AZCOM), Glendale, AZ

Fellowship Plans: Sports Medicine, Baylor University, Houston/San Antonio, TX



**Brian Scrivens, DO**

Medical School: Western University of Health Sciences, Lebanon, OR

Fellowship Plans: Sports Medicine, University of Buffalo, Buffalo, NY



**Heidi Smith, DO**

Medical School: Kansas City University, Kansas City, KS

Fellowship Plans: Sports Medicine, University of New Mexico in Albuquerque, NM

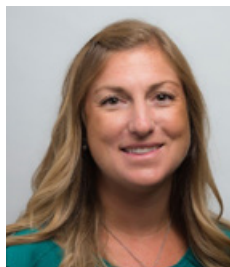
### PGY-3 Class

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**Eric Krohn, DO**

Medical School: Lake Erie College of Osteopathic Medicine, Erie, PA



**Jennifer Sharp, DO**

Medical School: Kansas City University, Kansas City, KS



**Mark Williams, DO**

Medical School: Philadelphia College of Osteopathic Medicine, Philadelphia, PA

# Resident Directory 2017-2018

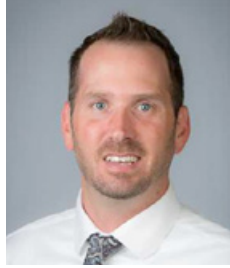
## Samaritan Health Services Residents

### PGY-2 Class

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**Justin Brohard, DO**  
Medical School: Western  
University of Health  
Sciences, Lebanon, OR



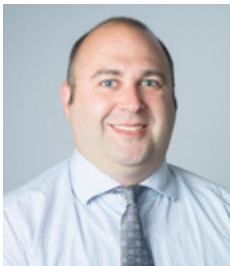
**Shaun Conley, DO**  
Medical School: Rocky  
Vista University COM,  
Parker, CO



**Justin Than, DO**  
Medical School: Western  
University of Health  
Sciences, Lebanon, OR

### PGY-1 Class

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**Cleon Dodge, DO**  
Medical School: Western  
University of Health  
Sciences, Lebanon, OR



**Tyler Petersen, DO**  
Medical School: Western  
University of Health  
Sciences, Lebanon, OR



**Babe Westlake, DO**  
Medical School: Western  
University of Health  
Sciences, Lebanon, OR



## Alumni Updates: Class of 2015



### ALEX DEHAAN, MD

After completing residency, I went to Nevada for the Reno-Tahoe Arthroplasty fellowship to further my knowledge and training. We have since moved back to the Portland area, where I am currently practicing in private practice at Orthopaedic and Fracture Specialists. My elective practice is primarily hip and knee arthroplasty, with a fair amount of fracture work as well. I am very happy and busy with a growing

practice. One of the OHSU PGY-4 residents rotates through our group, and I am the resident director for OFS, so it is nice to stay in touch and communication with the residents currently in training. Lauren and I have two children now, Makaleigh (4 years old) and Evan (2 years old), who are both growing up so fast and really showing their vibrant personalities. Life is good. I am very happy and grateful for my orthopaedic residency training at OHSU.

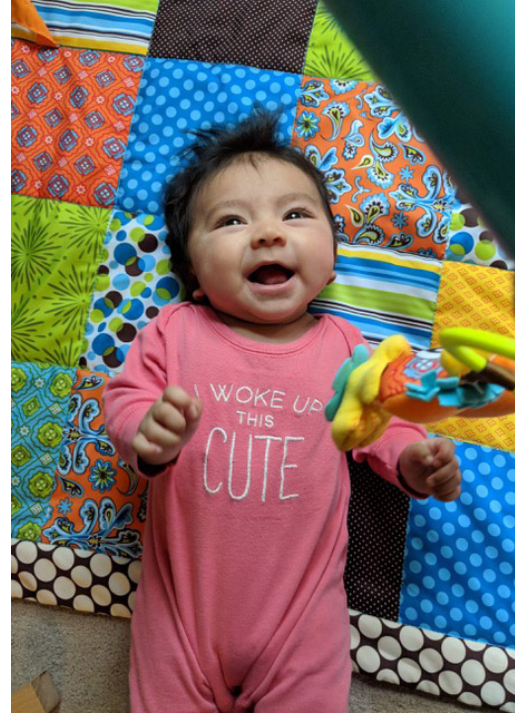




### **DUSTIN LARSON, MD**

It is amazing to think that almost three years have elapsed since completing residency at OHSU! Angela and I moved to Albuquerque in 2015 and I completed a one year hand and upper extremity fellowship at the University of New Mexico. We returned to Central Oregon in 2016 where I spent an enjoyable, challenging, and productive year in private practice in Bend. In 2017, the opportunity returned for me to join practice with my brother in our home town, Port Angeles, Washington. It has been a privilege

and pleasure to work with my brother and residency colleague, John Seddon at Olympic Medical Center. The bulk of my practice is hand and upper extremity related and I am busy with general orthopedic trauma as well. I am continually appreciative for the training and experience from my years of training at OHSU and grateful for the relationships with staff and colleagues there as well. Angela is very busy in full-time practice in Family Medicine. We bought a small farm and are enjoying opportunities there.



### VIVEK NATARAJAN, MD

After graduating, I did a Pediatric Orthopaedic fellowship at the Children's Hospital of Pittsburgh and then joined a practice in Morristown, NJ doing general pediatric orthopaedics. I decided a few months later that I would be happier focusing more on spine, and that I would like to do a second fellowship in spine. I was offered a spot

back at OHSU for the upcoming year. So, I'll be back! After fellowship, I'd like to do both adult and pediatric spine. In terms of family, my wife Annie and I had our son Owen during my fellowship in Pittsburgh. He turned 2 this spring, and he now has a new baby sister named Mira. We've been enjoying our time near our families here in NJ but are excited to head back to Portland.





### JOHN SEDDON, MD

We are currently living in Port Angeles, Washington. It is a beautiful part of the country where the ocean meets the Olympic Mountains. The Olympic National Park is right outside of town. My practice is split between General Orthopaedics and Foot and Ankle. I did two fellowships out of residency. I completed a fellowship in Foot and Ankle surgery in Melbourne Australia with the Melbourne Orthopaedic Group. This was followed by a

fellowship at Legacy Emanuel Hospital in Portland with Dr. Douglas Beaman and Dr. Richard Gellman focusing on foot and ankle trauma and deformity correction. We have a beautiful baby girl born in May of 2017, Ellie Grace Seddon. She joins our dog Tucker. We stay as active as we can outside of work. My wife, Kyla is teaching yoga, personal training and has continued her practice as a private chef. I am still doing triathlons when I get the opportunity. We are enjoying staying around the Pacific Northwest.

## OHSU Beals Memorial Seminar



*High School*



*Residency*



*Department Chief*



*Consummate surgeon and  
dedicated teacher to his last day*

The Beals memorial lectureship is an annual event established in honor of the late Rodney K. Beals, MD, Professor Emeritus in the Department of Orthopaedics & Rehabilitation at Oregon Health & Science University, who taught orthopaedics for more than 50 years. Dr. Beals was a lifelong “Oregonian” and spent his entire professional career practicing orthopaedic surgery in Portland, OR. Dr. Beals was a committed clinician, master surgeon, revered educator and accomplished researcher. It was not only out of respect for his scientific accomplishments, but for his humble guidance and mentorship that the OHSU Department of Orthopaedics & Rehabilitation established the annual Beals Memorial Lecture Series.

Dr. Beals attended Willamette University for his undergraduate training, graduating in 1952, and received his medical degree from the University of Oregon Medical School (precursor to OHSU) in 1956. He completed his internship at Minneapolis General Hospital followed by a General Surgical Residency in San Bernadino County Hospital in California. He ultimately

completed his training in Orthopaedic Surgery at the University of Oregon Medical School in 1961. Dr. Beals immediately joined the faculty and rapidly rose through the ranks at OHSU, serving as Head of the Division of Orthopedics from 1981 to 1994. Dr. Beals also served as the first chairman for the Department of Orthopaedic Surgery at OHSU in 1994. At the age of 77, he remained an active member of the Orthopaedic faculty at OHSU until the time of his passing on August 7, 2008.

Dr. Beals was an accomplished researcher throughout his career. He was nationally recognized for his research on skeletal manifestations of growth disturbances in children. He authored more than 150 peer-reviewed publications. Dr. Beals was also a revered educator. During his tenure at OHSU, he helped train more than 150 orthopaedic surgeons in residency. He also helped thousands of patients and mentored countless numbers of medical students. Throughout his remarkable career, Dr. Beals represented and personified excellence in medicine and orthopaedic surgery.

# Visiting Lectureships



Guest Lecturer 2018  
**Amy Ladd, MD**

## BEALS GUEST LECTURER

Dr. Amy Ladd holds the Elsbach-Richards Professor of Surgery and serves as Assistant Dean for Medical Advising at Stanford University. In the Department of Orthopaedics she serves as vice-chair of Academic Affairs and the hand fellowship director. Dr. Ladd is the Chair of the American Academy of Orthopaedic Surgeons Board of Specialties, leading over 20 subspecialties within the discipline of orthopaedic surgery.

Dr. Ladd's clinical practice includes surgery of the hand of both adults and children. As a clinician scientist, Dr. Ladd's research focuses on novel approaches to deciphering human motion as it relates to injury, disease, and deformity, for which her research team has garnered prestigious national awards. She holds 8 patents and trademarks for innovation that spans treatment of wrist fractures, thumb arthritis, codifies the golf swing, and promotes musculoskeletal health awareness. She is committed to interdisciplinary collaboration to promote musculoskeletal health and functional restoration across diverse populations and ages. Dr. Ladd's advocacy to promote pipeline education and mentorship in orthopaedic surgery complements community and national orthopaedic initiatives.



Alumni Guest Lecturer  
**Stephen Tower, MD**

## ALUMNI GUEST SPEAKER

Dr. Stephen Tower is an orthopedic surgeon whose special interest lies in primary and revision hip, knee and shoulder surgery, in addition to general orthopedics and trauma care.

Dr. Tower received his medical degree from the University of Washington, in Seattle, and completed his internship in Internal Medicine at Dartmouth Hitchcock Medical Center in Lebanon, NH. He served 4 years in the U.S. Public Health Service as a General Medical Officer for Indian Health. He completed his residency training in Orthopedic Surgery at the Oregon Health Sciences University in Portland.

A lifelong Alaskan, Dr. Tower has provided orthopedic care in Anchorage since 1992.



OHSU Faculty Speaker  
**Adam Mirarchi, MD**

## OHSU FACULTY SPEAKER

Dr. Adam Mirarchi received his undergraduate degree in electrical engineering from Alfred University in Alfred, New York and his medical degree from Temple University School of Medicine in Philadelphia, Pennsylvania. He completed his residency training at University Hospitals of Cleveland and a hand and upper extremity fellowship at Harvard affiliated Brigham and Women's Hospital in Boston, Massachusetts.

Dr. Mirarchi's research interests include distal radioulnar joint dysfunction and wrist trauma/reconstruction.

## Shriners Hospital for Children – Beattie Lecture Series



Mr. Byron Beattie was the owner and operator of a printing plant in Portland, Oregon. Mr. Beattie became acquainted with Dr. “French” Eldon Chuinard, while Dr. Chuinard was the chief of staff at Shriners Hospital for Children, Portland. He was so impressed with the importance of the educational mission of Shriners Hospital that he created an endowment fund to support our local education activities. The first seminar was held in 1985.



Guest Lecturer 2017  
**Steven L. Frick, MD**

### **BEATTIE GUEST LECTURER 2017**

Dr. Steven L. Frick is a pediatric orthopaedic surgeon who joined the faculty of the Stanford University Department of Orthopaedic Surgery in December 2016. He was the founding Chairman of the department of Orthopaedic Surgery at Nemours Children’s Hospital in Orlando, FL from 2012-2016. He also served as Surgeon-in-Chief and Chairman of the Department of Surgery, and Professor of Orthopaedic Surgery at the University of Central Florida. A native of Greenville, South Carolina, he graduated from The George Washington University in 1987 with a Bachelor of Science degree in Zoology (Phi Beta Kappa). At GWU he was a 4-year letterman in basketball and a two-time Academic All-American. He received his medical education at the Medical University of South Carolina in Charleston, graduating in 1991(Alpha Omega Alpha). He practiced pediatric orthopaedic surgery on the faculty at Carolinas Medical Center from 1998 - 2012, and was also a member of the orthopaedic trauma service caring for injured adults and children. He served as Residency Program Director in the Department of Orthopaedic Surgery at Carolinas Medical Center in Charlotte, NC under Chairman Edward N. Hanley, Jr. His academic interests include clubfoot and pediatric foot and ankle disorders, pediatric trauma, hip dysplasia, growth, leadership, professionalism, and graduate medical education. Dr. Frick is the author of more than 40 peer-reviewed publications and 12 book chapters.



## Shriners Hospital for Children – Dillehunt Memorial Lecture



### 56TH ANNUAL DILLEHUNT MEMORIAL LECTURE

The Dillehunt Memorial Lecture honors the contribution of a great surgeon and legendary teacher, Dr. Richard Dillehunt, who inspired many orthopaedists. With his keen interest in medical education, he played a prominent role in the development of the medical school on the hill. He was particularly devoted to children and was instrumental in the establishment of the Shriners Hospitals for Children, Portland. He became Shriners first Chief Surgeon in 1920, and served in that position until his retirement in 1943. His legacy continues through the Dillehunt Memorial Trust Fund, sponsoring visiting distinguished Pediatric Orthopaedic Surgeons from throughout the world.



Guest Lecturer 2018  
**Deborah Eastwood,**  
MB, ChB, FRCS

### DILLEHUNT GUEST LECTURER 2018

Dr. Eastwood is a consultant orthopedic surgeon and the orthopedic director of the Motor Learning Laboratory at the Royal National Orthopaedic Hospital in Stanmore, and consultant orthopedic surgeon at Great Ormond Street Hospital in London. Dr. Eastwood completed her medical training at the University of Birmingham and the Bristol Royal infirmary programs. Dr. Eastwood completed fellowship training in Brisbane and Melbourne, Australia and in Toronto, Ontario, Canada. She has been a member of the Board of Directors for the European Paediatric Orthopaedic Society (EPOS) from 2009 through 2015 and President of EPOS 2013-14. Dr. Eastwood is the author of 70 plus peer reviewed articles. She is the editor of two books and has written numerous book chapters.

# Resident and Teaching Awards

**Leo S. Lucas Outstanding Orthopaedic Educator Award:** Presented to the faculty member most instrumental in the development of future orthopaedic surgeons.

**Morris Hughes Award:** Presented to the resident who best demonstrates concern for patients and for education of the next generation of physicians.

**Research Award:** Presented to the resident recognized for a commitment to the development, execution and publication of original research during residency.

YEAR	LEO S. LUCAS	MORRIS HUGHES	RESEARCH AWARD
2007	Tom Ellis	Rob Tatsumi	Joseph Schenck
2008	Dennis Crawford	Stephan Pro	Kate Deisseroth
2009	Darin Friess	Stephan Pro	N/A
2010	Amer Mirza	Gary Kegel Gregory Byrd	Patrick Denard
2011	James Hayden	Jayme Hiratzka	Jayme Hiratzka Matthew Harrison
2012	Jesse A. McCarron	Luke Rust	Dawson Brown Matthew McElvany
2013	James Hayden	Laura Matsen Ko Jacqueline Munch	Adam Baker
2014	Adam Mirarchi	Rich Myers	Trevor McIver
2015	Kathryn Schabel	Dustin Larson	Alexander DeHaan
2016	Paul Duwelius	Jacob Adams	Thomas Kowalik
2017	Jacqueline Brady	Ryland Kagan	Michael Rose

# The evidence is in...

Following an analysis of published literature,\*  
the TRIGEN INTERTAN allows patients to experience:



**Lower**  
risk of implant  
failure and  
reoperation



**Faster**  
time to  
fracture union



**High**  
return to  
pre-fracture  
status

\*05036 V1 INTERTAN Claims Brochure 0616

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# Designed for Life

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Oxidized Zirconium with XLPE



 A technology from **smith&nephew**

A recent study presented at ORS indicates that the choice of femoral head material can have a major impact on the presence of corrosion in vivo.<sup>1</sup> With its biocompatible properties, due to its use of OXINIUM<sup>®</sup> femoral heads, VERILAST Technology has shown to reduce taper corrosion in total hip arthroplasty. This feature makes VERILAST Technology an optimal solution for total hip arthroplasty.

### Retrieval analysis<sup>2</sup>

- 15 year (1997-2012) retrieval analysis
- Taper damage related to head material
- CoCrMo heads show more corrosion and corrosion by products compared to OXINIUM alloy

To learn more about VERILAST and detailed results of the 2016 Australian Registry, go to [MadeToVerilast.com](http://MadeToVerilast.com)

### References

1. OR-13-75
2. Cartner et al ORS 2014



CoCrMo Retrieval



OXINIUM Retrieval

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Dr. David Noall (1977), Dr. Edgar Ragsdale (1978), Dr. Bryan Laycoe (1979) and Dr. Ted Vigeland (1977) enjoying a visit at Beals Day, 2017



2017 Graduating Chief Residents and Dr. Jung Yoo, along with Mrs. Beals and our Beals Day Speaker, Dr. Michael Ries (at left), at Beals Day 2017



## Just for Fun



Peters Otlans (R) and Dr. Gellman (L) operating during a trip to Peru



Orthopaedic residents have a ski day on Mt. Hood



OHSU Ortho chiefs and their families



Wine tasting in Hood River



OHSU Ortho chiefs and their families



OHSU residents and staff spinning on Halloween



Residents enjoying Christmas party, 2017

# OHSU Orthopaedic Program Alumni Directory

GRADUATE	FELLOWSHIP TRAINING	CURRENT PRACTICE LOCATION
<b>2017</b>		
John Cox	Adult Reconstruction - Scripps Health, San Diego, CA	
Ryland Kagan	Adult Hip and Knee Reconstruction and Hip Preservation - Univ. of Utah, Salt Lake City, UT	
Joseph Langston	Adult Reconstruction - Melbourne Orthopaedic Group, Melbourne Australia	
Michael Rose	Sports Medicine - Steadman Hawkins Clinic, Denver, CO	
Ryan Wallenberg	General Orthopedics - St. Vincent's Hospital, Portland, OR	
<b>2016</b>		
Jake Adams	Adult Reconstruction - Mayo Clinic, Scottsdale, AZ	Regenerative Orthopaedic Center, Tualatin and Oregon City, OR
Kristen Jansen	Adult Reconstruction - Indiana University, Indianapolis, IN	STL Orthopedics, Chesterfield, MO
Tom Kowalik	Trauma & Adult Reconstruction - Orthopedic + Fracture Specialists, Portland, OR and Sydney Australia Arthroplasty & Trauma	Tuality Orthopaedic, Sports, Spine & Rehabilitation Center, Hillsboro, OR
Jared Mahylis	Shoulder & Elbow - Cleveland Clinic, Cleveland, OH	Specialty Physicians of Illinois, Olympia Fields, IL
Farbod Rastegar	Spine - Cleveland Clinic, Cleveland, OH	Aurora Orthopaedics, Grafton, WI
<b>2015</b>		
Alex DeHaan	Adult Reconstruction - Tahoe Reno Arthroplasty Fellow, Reno, NV	Orthopedic + Fracture Specialists, Portland, OR
Troy Miles	Adult Reconstruction - UC Davis, Davis, CA	Shasta Orthopaedics, Redding, CA
Dustin Larson	Hand and Upper Extremity - Univ. of New Mexico, Albuquerque, NM	Olympic Medical Physicians Orthopaedic Clinic, Port Angeles, WA
Vivek Natarajan	Pediatrics - Childrens Hospital of Pittsburgh, PA	Advocate - The Orthopaedic Center, Cedar Knolls, NJ
John Seddon	Foot & Ankle - Melbourne Orthopedic Group, Melbourne, Vic, Australia	Olympic Medical Physicians Orthopaedic Clinic, Port Angeles, WA
<b>2014</b>		
Zachary B. Domont	Sports Medicine - Univ. of Pennsylvania, Philadelphia, PA	AMG-Lincolnshire Orthopedics, Lincolnshire, IL
Jia-Wei Kevin Ko	Shoulder & Elbow - Rothman Institute, Thomas Jefferson Univ., Philadelphia, PA	Orthopedic Physician Associates, Seattle, WA
Trevor C. McIver	Spine - Spine Institute of Arizona, Scottsdale, AZ	St. Cloud Orthopedics, Sartell, MN
Richard J. Myers	Orthopaedic Trauma - Univ. of Maryland, College Park, MD	Sentara Orthopedic Trauma Specialists, Norfolk, VA
Brent M. Roster	Foot & Ankle - Univ. of California Davis Medical Center, Sacramento, CA	Missoula Bone and Joint Clinic, Missoula, MT
<b>2013</b>		
Adam P. Baker	Foot & Ankle - Northwest Orthopedic Specialists, Portland, OR	Kaiser Permanente, Portland, OR
Michael Kuhne	Trauma Orthopedics - Univ. of California, San Francisco General Hospital, San Francisco, CA	Enloe Medical Center, Chico, CA
Laura J. Matsen Ko	Adult Reconstruction - Thomas Jefferson Univ., Philadelphia, PA	Orthopedic Physician Associates, Seattle, WA
Jacqueline L. Munch	Shoulder Surgery, Sports Medicine - Hospital for Special Surgery, New York, NY	Oregon Health & Science Univ., Portland, OR
Daniel C. Wiekling	Foot & Ankle - Melbourne Orthopaedics, Melbourne Australia	Asante Physician Partners, Grants Pass, OR
<b>2012</b>		
Dawson S. Brown	Sports Medicine - Southern California Orthopedic Institute, Van Nuys, CA	West Sound Orthopedics, Silverdale, WA
Peter D. Fredericks	Trauma Orthopedics - Indiana Orthopaedic Hospital, Indianapolis, IN	UCHealth Orthopaedics Clinic, Colorado Springs, CO
Matthew D. McElvany	Shoulder & Elbow - Univ. of Washington Medical Center, Seattle, WA	Kaiser Permanente, Santa Rosa, CA
Cuchulain Luke Rust	Foot & Ankle - Orthopaedic Associates of Michigan, Grand Rapids, MI	Rebound Orthopedics, Vancouver, WA
<b>2011</b>		
Matthew J. Harrison	Foot & Ankle - Oakland Bone & Joint Specialist Clinic, Oakland CA; Middlemore Hospital, Auckland, New Zealand	Alta Orthopedics, Santa Barbara, CA
Jayne R. Hiratzka	Spine Surgery - Univ. of Utah, Salt Lake City, UT	Oregon Health & Science Univ., Portland, OR
Jackson B. Jones	Adult Reconstruction - Harvard Medical School's Brigham and Women's Hospital, Boston, MA	Reno Orthopedic Clinic, Reno, NV



# OHSU Orthopaedic Program Alumni Directory

GRADUATE		FELLOWSHIP TRAINING	CURRENT PRACTICE LOCATION
<b>2010</b>			
Matthew W. Bradley			Orthopedic Sports Medicine & Spine Care Institute, St. Louis, MO
Gregory D. Byrd	Hand - Beth Israel Deaconess Medical Center, Boston, MA		Olympia Orthopedics, Olympia, WA
Adam E. Cabalo	Spine - Spine Care Medical Group, Daly City, CA		Southern Oregon Orthopedics, Medford, OR
Patrick J. Denard	Shoulder - Centre Orthopédique Santy, Lyon, France and San Antonio Orthopaedic Group, San Antonio, TX		Southern Oregon Orthopedics, Medford, OR
Gary Kegel	Hand - St Luke's-Roosevelt Hospital Center, New York, NY		Group Health Capital Hill Medical Center, Seattle, WA
<b>2009</b>			
Stephen L. Pro	Sports Medicine - Santa Monica Orthopaedic and Sports Medicine Group, Santa Monica, CA		Ortho Kansas, Lawrence, KS
Khalid Shirzad	Foot & Ankle - Duke Univ. School of Medicine, Durham, NC		Northwest Orthopedic Specialist, Spokane, WA
Abner M. Ward	Hand - SUNY Stony Brook Univ. Hospital & Medical Center, Stony Brook, NY, and Sports Medicine - Southern CA Center for Sports Medicine, Long Beach, CA, and Shoulder & Elbow - Alps Surgery Institute, Annecy, France, and Shoulder & Elbow - Schulthess Klinik, Zurich, Switzerland		Yosemite Bone and Joint, Inc., Merced, CA and Turlock, CA
<b>2008</b>			
Kate B. Deisseroth			VA Medical Center, Lebanon, PA
Andy J. Kranenburg	Surgery and Trauma - San Francisco Spine Institute, San Francisco, CA		Southern Oregon Orthopedics, Medford, OR
Kenna Larsen	Hand - Univ. of New Mexico, Albuquerque, NM		Utah Orthopaedics, Ogden, UT
<b>2007</b>			
William Magee	Sports Medicine -TRIA Orthopaedic Center, Park Nicollet Methodist Hospital, Minneapolis, MN		Rockwood Clinics, Spokane, WA
J. Rafe Sales	Spine-San Francisco Spine Institute, San Francisco, CA		Summit Spine, Portland, OR
Joseph Schenck	Sports Medicine - Perth Orthopaedic Sports Medicine Center, Perth, Australia and Arthroscopic Surgery and Computer Navigated Total Joint Arthroplasty - Sir Charles Gairdner Hospital, Nedlands, Western Australia		Orthopedic & Sports Medicine, Portland, OR
Robert L. Tatsumi	Spine - LA Spine Institute, Santa Monica, CA		Oregon Spine Care, Tualatin, OR
<b>2006</b>			
Catherine A. Humphrey	Trauma - Vanderbilt Univ. Medical Center, Nashville, TN		Univ. of Rochester Medical Center, Rochester, NY
Amer J. Mirza	Trauma - Harborview Medical Center, Seattle, WA		Summit Orthopaedics, LLP, Portland, OR
Mark B. Wagner			Orthopedics NW, Tigard, OR
<b>2005</b>			
Patrick A. Dawson	Upper Extremity and Sports Medicine - Congress Medical Associates, Pasadena, CA		Cascade Orthopaedic Group, Tualatin, OR
Suresh Kasaraneni			Scott Memorial Hospital, Scottsburg, IN
Christopher M. Untch	Surgical Services - Davis Monthan AFB, Tucson, AZ		Arizona Orthopedics, Tucson, AZ
Corey J. Vande Zandschulp	Trauma - OrthoIndy, Methodist Hospital, Indianapolis, IN		Summit Orthopaedics, LLP, Portland, OR
<b>2004</b>			
Benjamin C. Kam			Medical Center Point, Colorado Springs, CO
Britton (Polzin) Frome	Hand Surgery - UT Southwestern, Dallas, TX		Summit Orthopaedics, LLP, Portland, OR
<b>2003</b>			
Jennifer R. Miller	Sports Medicine - Congress Medical Associates, Pasadena, CA		Idaho Sports Medicine Institute, Boise, ID
John B. Reid	Sports Medicine - Taos Orthopaedic Institute, Taos, NM		Taos Orthopaedic Institute, Taos, NM
Eric F. Shepherd	Trauma - UC Davis Medical Center, and Auckland City Hospital, NZ		Santa Barbara Orthopedic Associates, Santa Barbara, CA

# OHSU Orthopaedic Program Alumni Directory

GRADUATE	FELLOWSHIP TRAINING	CURRENT PRACTICE LOCATION
<b>2002</b>		
Michael A. Binnette	Spine - Univ. of Washington, Seattle, WA	OA Center for Orthopaedics, Portland, ME
Kevin M. Kahn	Trauma - Universitatsspital, Zurich Switzerland, Vanderbilt Orthopaedic Inst., Nashville, TN	Rebound Orthopedics & Neurosurgery, Vancouver, WA
Tamara S. Simpson	Trauma - UCSF - Sports Medicine; Hennepin Medical Center, Minneapolis, MN	Cascade Orthopaedic Group, Tualatin, OR
<b>2001</b>		
Michael J. Gustavel	Sports Medicine - San Diego Sports Medicine and Orthopaedic Center, San Diego, CA	Idaho Sports Medicine Institute, Boise, ID
James B. Hayden	Musculoskeletal Oncology - Massachusetts General Hospital, Boston, MA	Oregon Health & Science Univ., Portland, OR
Todd W. Ulmer	Sports Medicine - Univ. of Washington, Seattle, WA	Columbia Orthopedic Associates, Portland, OR
<b>2000</b>		
Mark S. Metzger	Joint, Spine & Tumor - Harvard Medical School, Boston, MA	
Lorenzo L. Pacelli	Hand & Microvascular Surgery - Hand Center, San Antonio, TX	Scripps Clinic Torrey Pines, La Jolla, CA
Edward A. Perez	Trauma - R. Adams Cowley Shock Trauma Center, Baltimore, MD	Campbell Clinic Orthopaedics, Germantown, TN
<b>1999</b>		
Anthony I. Colorito	Sports Medicine - Cincinnati Sports Medicine and Orthopedic, Cincinnati, OH	Orthopedic & Sports Medicine, Portland, OR
John M. Kioschos	Shoulder and Elbow Surgery - Florida Orthopaedic Institute, Tampa, FL	Tri Star Skyline Medical Center, Nashville, TN
Jill A. Rider-Graves		
<b>1998</b>		
John D. Curtis		Dory Orthopaedics, Uab Medical West, Bessemer, AL
Darrin F. Eakins	Sports Medicine and Knee - Royal N Shore Hospital, Sydney, Australia	Ortho Wilmington, Wilmington, NC
Ronald D. Wobig	Sports Medicine and Knee - Louisiana State Univ., Lake Charles, LA	Beaver Sports Medicine, Corvallis, OR
<b>1997</b>		
Dennis J. Davin		
Kevin M. Lee		Upper Valley Orthopedics, Rexburg, ID
Ronald L. Teed		Cascade Orthopedic Surgery, Hillsboro, OR
<b>1996</b>		
Knut C. Buehler	Lower Extremity Reconstruction - Scripps Clinic and Research Foundation, San Diego, CA	Center Orthopedic & Neurosurgical Care & Research, Bend, OR
Thomas J. Croy		310 Villa Road, Ste 108, Newberg, OR
Marc R. Davidson	Sports Medicine - The Hughston Clinic, Columbus, GA	Advantage Orthopedic and Sports Medicine Clinic, LLP, Gresham, OR
<b>1995</b>		
Douglas R. Bagge		Cortez Orthopedics, Cortez, CO
Robert A. Foster	Hand and Microvascular Surgery - Univ. of Minnesota, MN	Texas Orthopedics Sports and Rehabilitation Association, Austin, TX
Gregory A. Voit	Hand and Microvascular Surgery - Univ. of New Mexico Health Sciences Center, Albuquerque, NM	
<b>1994</b>		
Robert J. Grondel	Sports Medicine and Shoulder - Mississippi Orthopaedic & Sports Medicine Clinic; Trauma - Emanuel Hospital, Portland, OR	Orthopaedic Institute of Henderson, Henderson, NV
Allen L. Hershey	Lower Extremity Reconstruction - Scripps Clinic and Research Foundation, San Diego, CA	Precision Orthopedics and Sports Medicine, Salinas, CA
Brian J. Padrta	Foot and Ankle - Florida Orthopaedic Institute, Univ. of South Florida, Tampa, FL	Northwest Orthopaedic Specialists, Spokane, WA
Mark R. Rangitsch		Cheyenne Orthopaedics LLP, Cheyenne, WY

# OHSU Orthopaedic Program Alumni Directory

GRADUATE		FELLOWSHIP TRAINING	CURRENT PRACTICE LOCATION
<b>1993</b>			
Blaine A. Markee			
Dean K. Olsen			Park Nicollet Orthopaedics, Burnsville, MN
Andrew H. Schmidt	Adult Reconstruction, Shoulder Surgery, Trauma - Hennepin County Medical Center, Minneapolis, MN		Hennepin County Medical Center, Minneapolis, MN
<b>1992</b>			
Edward C. Pino	Sports Medicine - Cincinnati Sports Medicine, Cincinnati, OH; Foot & Ankle - Michigan Internat. Foot and Ankle Center, Detroit, MI		Kaiser Permanente, Denver, CO
Stephen S. Tower			Anchorage Fracture & Orthopedic Clinic, Anchorage, AK
Michael R. Van Allen	Hand and Microsurgery - Univ. of Alabama, Birmingham, AL		Legacy Meridian Park Medical Center, Tualatin, OR
<b>1991</b>			
Ronald R. Bowman			Tigard Orthopedic & Fracture Clinic, Portland, OR
William H. Dickinson			
Richard A. Rubinstein	Methodist Sports Medicine Center, Indianapolis, IN		Providence Portland Medical Center, Portland Knee Clinic, Portland, OR
<b>1990</b>			
Gregory T. Bigler	Sports Medicine and Arthroscopy - Harvard Medical School, Massachusetts General Hospital, Boston, MA		Thomas & Bigler Knee and Shoulder Institute, Las Vegas, NV
Adrian B. Ryan			Anchorage Fracture & Orthopedic Clinic, Anchorage, AK
Theodore S. Woll	Foot and Ankle - Univ. of Washington, Seattle, WA		Rebound Orthopaedics, Vancouver, WA
<b>1989</b>			
James R. Hazel			Tri-City Orthopaedics, Kennewick, WA
Asa E. Stockton			Eureka Community Health Center, Eureka Open Door, Eureka, CA
Keith J. Ure	Joint Replacement - Joint Replacement Institute, Orthopaedic Hospital, Los Angeles, CA		Olympic Medical Center, Sequim, WA
Robert G. Zirschky			Hope Orthopedics of Oregon, Salem, OR
<b>1988</b>			
John D. DiPaola			Occupational Orthopedics, Tualatin, OR
Jeffrey E. Flemming	Texas Southwestern Medical Center - Texas Back Institute, Dallas, TX		Providence Portland Medical Center, Portland, OR
Morris Hughes			
Michael B. Wyman			Orthopedic Specialists, Portland, OR
<b>1987</b>			
Dale G. Bramlet	Orthopaedic & Plastic Surgery, Hand and Upper Extremity - Univ. of Rochester Medical Center, Rochester, NY		Advent Orthopedics, Pinellas Park, FL
Scott B. Jones			Orthopedic & Sports Medicine Center of Oregon, Portland, OR
Stefan D. Tarlow	Knee Surgery - Dr. Jan Gillquist, Sweden; Sport Medicine - Dr. James Andrews, Birmingham, AL		Advanced Knee Care, PC, Scottsdale, AZ
<b>1986</b>			
Mark J. Buehler	Hand - Duke Univ., Durham, NC		Providence Hospital, Portland, OR
Wendell D. Ferguson	Providence Medical Center, Portland, OR		Vallejo Kaiser Medical Center, Vallejo, CA
Paul A. Switlyk	Shoulder - Univ. of Western Ontario, London, ON		Orthopedic & Sports Medicine Center of Oregon, Portland, OR

# OHSU Orthopaedic Program Alumni Directory

1985
Stanley J. Neitling
Daniel N. Ovadia

1984
Steven J. Bruce
Kenneth A. Hermens
Wendy M. Hughes

1983
Michael J. Grundy
Paul J. Mills
John C. Schwartz

1982
Julie Isaacson
James D. Livermore
John S. Toohey

1981
Christopher A. Blake
Wayne K. Nadamoto
Samuel K. Tabet

1980
Lenart C. Ceder
Jonathan H. Hoppert
Robert W. Jordan

1979
Brian Laycoe
Donald Peterson
James Robbins

1978
Lyle Mason
Edgar K. Ragsdale
Enoch D. Shaw

1977
David L. Noall
Byron K. Skubi
Robert K. Smith
Theodore J. Vigeland

1976
Wayne C. Kaesche
Walter A. Smith
Stephen J. Thomas

1975
Randy W. Crenshaw
John O. Hayhurst
Patrick T. Keenan
Kelsey C. Peterson
Ned R. Schroeder

1974
Thomas W. Hutchinson
Robert J. Porter
Frederick L. Surbaugh

1973
James L. Baldwin
David A. Haaland
Craig MacCloskey

1972
Michael S. Hmura
Grant D. Lawton
Michael R. Marble

1971
Charles B. Bird
Robert G. Chuinard
Jim Dineen
Ilmar O. Soot

1970
Philip J. Fagan
Robert J. Foster
Art Hauge
Edwin A. Kayser
Gerald T. Lisac
Ira M. Yount

1969
Thomas E. Fagan
Michael H. Graham
George W. Ingham
Joseph P. Klein
Scott Struckman

1968
Benjamin F. Balme
James D. Kunzman
James D. Nelson
Frederick D. Wade

1967
Michael S. Baskin
John W. Gilsdorf
John W. Thompson

1966
Charles A. Bonnett
McGregor L. Church
Don D'Amico
Fred G. Grewe
Howard E. Johnson

1965
Arthur L. Eckhardt
John Hazel
Richard L. Mercer

1964
Robert F. Corrigan
Richard C. Zimmerman

1963
Donn K. McIntosh
Michael R. Rask

1962
Phaen Gambée
Norman D. Logan
Keith A. Taylor

1961
Rodney K. Beals
Thomas A. Edwards
George Keyes
Ralph E. Peterson

1960
Charles A. Fagan
Calvin H. Kiest
Betty J. Hohmann
Robert W. Straumfjord
Bud Yost

1959
Raymond A. Case
James V. Harber

1958
Richard G. Gardner
William D. Guyer

1957
Hadley F. Fitch
Richard S. Gilbert

1956
William E. Hummel
Joseph R. McProuty
Jack B. Watkins

1955
Edward A. Attix
Max M. Bocek

1954
Howard I. Popnoe
Dale D. Popp

1953
Donald D. Smith

1952
Melvin L. Makower

1951
Bob Maris
William E. Snell
James W. Weed

1950
Ralph Thompson

1949
Howard Cherry
Boyd G. Holbrook
Richard J. Hopkins

1948
Robert F. Anderson
George W. Cottrell
Carl L. Holm

1947
Edward A. LeBold

1946
William P. Horton
Clyde D. Platner
Faulkner A. Short

1945
Joseph H. Gill

1943
Paul G. Hafner

1942
Rodney Begg
Harold E. Davis

1940
Leslie S. Porter

1938
Arthur M. Compton

1935
E.G. Chuinard

1931
Harry Leavitt

1929
D.G. Leavitt

1928
Leslie C. Mitchell

1925
John LeCocq

1924
Leo S. Lucas

## Special Thanks

The Department of Orthopaedics and Rehabilitation at OHSU thank the following for their generous donations to our department, as well as the many contributors who wish to remain anonymous.

### **\$10,000 - \$50,000**

Acumed, LLC  
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Dr. Bryan Laycoe  
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Dr. Jung Yoo  
plus 1 donor who wishes to  
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### **\$1,000 - \$10,000**

American Medical Society  
for Sports Medicine, Inc.  
Dr. Jia-Wei (Kevin) Ko and  
Dr. Laura Matsen Ko  
Dr. David Noall

### **Up to \$1,000**

Dr. Matthew Halsey  
Ms. Karen Hartley  
Dr. Walter Smith  
Dr. Stephen Tower  
plus 8 donors who wish  
to remain anonymous

## In Addition

The Beals family continues their generosity to our department with contributions in the name of Dr. Rodney Beals, and in their estate plans as an eventual beneficiary. The history of our department and orthopaedics in the state of Oregon would not be the same without the significant contributions of Dr. Beals, and the Beals family contributions are vital to keeping Dr. Beals hopes for Oregon Orthopaedics alive.

## Updates:

Dr. David Noall updated us recently. He retired from active practice in 2013. Since then, he has kept his emeritus license and has been making annual medical mission trips to Peru and Ecuador under the auspices of the Salem-based Capital Cities Medical Teams, engaged in pediatric orthopedics. He attends our orthopaedic department grand rounds in order to keep current, and he is also active in the Rotary Club of Portland as Chairman of the Exchange Student Program. In his spare time, he is active in Amateur Radio and is learning to repair and restore antique clocks.

Dr. Walter Smith retired from surgery about four years ago, but is still active with IME's 3 days per week.



Drs. Laura and Kevin Ko welcomed their second child in October and are enjoying growing their practice in Seattle, Washington. They enjoy working at the same group, OPA Ortho, and sometimes operating together. Kevin can be found fixing anything between the shoulder and the elbow while Laura does total hip and total knees.



# Special Thanks

## Robin Sasaoka

Education Manager

A special thanks to our Education Manager, Robin Sasaoka. She is our continual resource for all resident needs. She coordinates all conferences, call schedules, educational schedules, financial paperwork, and much more.

## Marie Kane

Technical Writer

The editors would like to thank Marie Kane for all of her support to make this journal a reality. Without her constant encouragement, support, and expertise this publication would have never made it to the press.

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The goal of this publication is to grow and mature over the next several years. We would love any input from our alumni and local community on ways to improve the journal.

If you are an alumni and your information has changed with regard to your current practice type and/or practice location, please contact us so that your information can be updated for next year's journal.

## Department of Orthopaedics & Rehabilitation

3181 SW Sam Jackson Park Road

Mail Code OP31

Portland, OR 97239

Tel: 503 494-6400 • Fax: 503 494-5050





# Please Consider Supporting the OHSU Department of Orthopaedics and Rehabilitation

You can make a significant impact on our ability to train the next generation of specialists, advance patient care, and develop new knowledge through research. We are building on a legacy of excellence that spans Richard Dillehunt, M.D., and Leo Lucas, M.D., to Lawrence Noall, M.D., and Rodney Beals, M.D., to our current department chair, Jung Yoo, M.D. Your personal gift is a vital part of this legacy and will help us advance the future of Orthopaedics.

Please make your gift to the Department of Orthopaedics and Rehabilitation by donating to one or more of the fund areas below. Each provides crucial and strategic resources for our educational, training and research missions.

## **Rodney K. Beals, M.D. Endowment for Faculty Excellence in Orthopaedics & Rehabilitation**

Supports innovative and mission-focused work of exceptional faculty members. This fund honors Dr. Beals' legacy while enabling faculty to explore new horizons to advance the field of Orthopaedics.

## **Lawrence Noall, M.D. Fund for Excellence in Orthopaedic Resident Education**

Supports resident education and training.

## **Orthopaedic Research Endowment**

Provides essential support for basic science research in the field of Orthopaedics.

## **OHSU Department of Orthopaedics & Rehabilitation Support Fund**

Making a gift to this fund is one of the best ways to advance the education, training and research missions of the department. It is often used to capitalize on unique opportunities and provide crucial bridge funding for innovative projects.

Please contact us if you to discuss these and other giving opportunities, or if you have (or plan to) include the OHSU Department of Orthopaedics and Rehabilitation in your estate plans.

## **Ways to Give**

The OHSU Department of Orthopaedics and Rehabilitation gratefully accepts outright gifts or pledges, as well as deferred or planned gifts.

**Outright gifts and pledges:** You can make an outright gift of cash or certain other assets with the option of making your gift as a pledge over a period of up to five years.

**Planned or deferred gifts:** A gift made through your will or trust, retirement account or life insurance, allows you to support OHSU Orthopaedics and can often have financial and tax benefits to you and your heirs. The OHSU Foundation's gift planning professionals can also assist with gifts of real estate, stocks, bonds, gifts-in-kind and other marketable assets.



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System

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