HOSPITAL FOR SPECIAL SURGERY

2018 Academic Presentations from the Annual Meetings of the American Academy of Orthopaedic Surgeons & Orthopaedic Research Society
Dear Colleague,

I am pleased to inform you of Hospital for Special Surgery’s participation at this year’s annual AAOS and ORS meetings, where HSS faculty showcased important research in today’s orthopaedic field. The following pages show the diversity of moderated panels, and numerous oral and poster presentations.

You are invited to sign up at hss.edu/professional to receive updates about HSS eAcademy®, our online professional education platform, an unparalleled selection of over 600 on-site, live streaming and on-demand offerings; as well as news and information from HSS Education Institute.

This is an age of transformation in healthcare. I am proud of the work we do at HSS and our presence at these meetings underscores the valuable contributions HSS makes to patients around the world. Please reach out to professionaleducation@hss.edu should you want more information on these academic presentations.

Todd J. Albert, MD
Surgeon-in-Chief
Adult Reconstruction & Joint Replacement Division

2-HOUR INSTRUCTIONAL COURSE

Is Medical Clearance Enough? Understanding Medical Issues that Can Affect Your Patients’ Outcomes
Moderator: Joseph Lane, MD
Charles Cornell, MD

CASE PRESENTATIONS

Trunions, Tapers, and Corrosion in Total Hip Arthroplasty: What’s All the Fuss About? What Every Surgeon Should Know
Mathias Bostrom, MD, Douglas Padgett, MD, Peter Sculco, MD
The Post “OOP” Knee
Steven Haas, MD, David Mayman, MD, Geoffrey Westrich, MD

INSTRUCTIONAL COURSE

Thromboembolism Prophylaxis for Orthopaedic Surgeons: Update 2018
Douglas Padgett, MD

ORTHOPAEDIC VIDEO LIBRARY

The Difficult Primary TKA (Video-Based)
Moderator: Mathias Bostrom, MD

PAPER PRESENTATIONS

Access to the Ischium: A Simple Extension of the Posterior Approach in Revision Hip Arthroplasty
Kilian Rueckl, MD, Maximilain Kasparek, MD, Friedrich Boettner, MD
Antioxidant Stabilized Highly Cross-Linked Polyethylene in Total Knee Arthroplasty: A Retrieval Analysis
Danielle Ponzio, MD, Lydia Weitzler, MS, Christina Esposito, PhD, Timothy Wright, PhD, Douglas Padgett, MD
Characterizing the Diagnosis and Treatment of Allergic Contact Dermatitis to 2-Octyl Cyanoacrylate Utilized for Skin Closure in Elective Orthopaedic Surgery
Brian Chalmers, MD, Heath Melugin, MD, Peter Sculco, MD, Rafael Sierra, MD, Michael Stuart, MD, Mark Pagnano, MD, Michael Taunton, MD
Comparison of Infection Risk with Corticosteroid or Hyaluronic Acid Injection Prior to Total Knee Arthroplasty
Shawn Richardson, MD, William Schairer, MD, Peter Sculco, MD, Thomas Sculco, MD
Comparison of Pharmacologic Prophylaxis in Prevention of Venous Thromboembolism Following Total Knee Arthroplasty
Shawn Richardson, MD, William Schairer, MD, Peter Sculco, MD, Mathias Bostrom, MD
Diagnosing Periprosthetic Joint Infection After Unicompartmental Knee Arthroplasty: Is it Similar to Total Knee Arthroplasty?
Chelsea Koch, BS, Yuo-Yu Lee, MS, Michael Cross, MD
Distal Femoral Arthroplasty in Non-Oncologic Patients Undergoing Revision Knee Arthroplasty
Ivan De Martino, MD, Rocco D’Apolito, MD, Allina Nocon MPH, Mathias Bostrom, MD, Thomas Sculco, MD, Peter Sculco, MD
Effect of Surgical Approach on Outcomes Following Same-Day Bilateral Total Hip Arthroplasty
Lazaros Poultsides, MD, Danielle Poncio, MD, Kathryn Oi, BA, Stavros Memtsoudis, MD, PhD, Edwin Su, MD, Thomas Sculco, MD, Michael Alexiades, MD
Failure After Modern Total Knee Arthroplasty: A Prospective Study of 18,065 Knees
Michael Pitta, MD, Christina Esposito, PhD, Zhichang Lee, MD, Yuo-Yu Lee, MS, Timothy Wright, PhD, Douglas Padgett, MD
Functional Component Position and Pelvic Flexibility Impact Prosthetic Stability Following Total Hip Arthroplasty
Denis Nam, MD, Carolyn Anglin, PhD, Pierre Yves Lagace, Robert Barrack, MD, Aaron Buckland, FRACS, Jonathan Viggodichik, MD, David Mayman, MD
Hip Flexion Increases and Spine Flexion Decreases From Standing to Sitting Position 1 Year After Patients Undergo Total Hip Arthroplasty
Jonathan Berliner, MD, Christina Esposito, PhD, Theodore Miller, MD, Douglas Padgett, MD, David Mayman, MD, Seth Jerabek, MD
Implant Selection Errors in Total Hip and Knee Arthroplasty
Steven Haas, MD, David Mayman, MD, Alejandro Gonzalez Della Valle, MD, Michael Ast, MD
Implant Survival and Patient-Reported Outcomes After Total Hip Arthroplasty in Young Patients
Ishaan Swarup, MD, Yuo-Yu Lee, MS, Ryan Sutherland, BA, Marisa Shields, BA, Mark Figgie, MD

Is Frailty Associated with Adverse Events After Total Joint Arthroplasty?
Lisa Mandl, MD, MPH, Abigail Schmucker, BA, Charles Cornell, MD, Michael Cross, MD, Alejandro Gonzalez Della Valle, MD, Mark Figgie, MD, Seth Jerabek MD, Jackie Szymonifka, MA, Steven Magid, MD

Outcomes Following Revision of Metal-on-Metal Total Hip Arthroplasty
Danielle Ponzio, MD, Anthony Salvatore, MS, Allina Nocon, MPH, Friedrich Boettner, MD

Prior Hip Arthroscopy Does Not Affect Clinical Outcomes Following Total Hip Arthroplasty: An Institutional, Matched Cohort Study
Lazaros Poultsides, MD, Branden Sosa, Yuo-Yu Lee, MS, Kathryn Oi, BA, Robert Buly, MD

Randomized Controlled Trial of Essential Amino Acid Supplementation in Patients Following Total Knee Arthroplasty
Seth Jerabek, MD, Kaitlin Carroll, BS, Peter Sculco, MD, David Mayman, MD

Risk of Ischemic Stroke After Perioperative Atrial Fibrillation in Total Knee and Hip Arthroplasty Patients
Sariah Khormaee, MD, Huong Do, MA, Gino Gialdini, Hooman Kamel, MPH, Michael Cross, MD

Social Factors and Racial Disparities in Total Hip Arthroplasty Outcomes
Susan Goodman, MD, Bella Mehta, MBBS, Meng Zhang, PhD, Jackie Szymonifka, MA, Joseph Nguyen, MPH, Yuo-Yu Lee, MS, Mark Figgie, MD, Michael Parks, MD, Shirin Dey, BS, Daisy Crego, BA, Linda Russell, MD, Lisa Mandl, MD, MPH, Anne Bass, MD

The Influence of Obesity on the Infection Risk of Prosthetic Joint Infection in the Geriatric Orthopaedic Population
Allina Nocon, MPH, Michael Henry, MD, Celeste Russell, MPH, Geoffrey Westrich, MD, Barry Brause, MD, Andy Miller, MD

We Are Collecting the Hip Disability and Osteoarthritis Outcome Score (HOOS, JR.). Now What?
Stephen Lyman, PhD, Yuo-Yu Lee, MS, Alexander McLawhorn, MD, MBA, Wasif Islam, BS, Catherine MacLean, MD, PhD

Wear Analysis of Highly Cross-Linked Polyethylene in Young and Active Patients at Average 14 Years
Michael Gaudiani, BA, Amar Ranawat, MD, Chitranjan Ranawat, MD

Wear Rates with Large Metal and Ceramic Heads on a Second Generation Highly Cross-Linked Polyethylene at Mean Six-Year Follow Up
Michael Gaudiani, BA, Peter White, Amar Ranawat, MD, Chitranjan Ranawat, MD

POSTERS

A New Risk-Assessment Score and Treatment Algorithm for Patients at High-Risk of Dislocation Following Total Hip Arthroplasty
Jonathan Vigdorchik, MD, Ameer Elbuluk, BA, Kaitlin Carroll, BS, David Mayman, MD, Richard Iorio, MD, Aaron Buckland, FRACS, Seth Jerabek, MD

Acetabular Version and Acetabular Coverage Measurements Have Clinically Relevant Associations with Pelvic Incidence and Pelvic Tilt in Patients Treated for Femoroacetabular Impingement
Graeme Whyte, FRCSC, Aaron Buckland, FRACS, Douglas Mintz, MD, Ernest Sink, MD, Struan Coleman, MD, PhD, Robert Buly, MD

Age Related Functional Decline in Patient Reported Outcomes Following Total Knee Arthroplasty: Risk Adjustment Is Mandatory
Michael Pitta, MD, Aleem Lalani, MD, Pauline Woo, Geoffrey Westrich, MD, Yuo-Yu Lee, MS, Stephen Lyman, PhD

Anatomic Features of the Femoral Condyle Correspond to Intersubject Variations in Medial Collateral Ligament Tension in Total Knee Arthroplasty
Mohammad Kia, Carl Imhauser, PhD, Timothy Wright, PhD, Michael Cross, MD, David Mayman, MD, Andrew Pearle, MD, Peter Sculco, MD, Geoffrey Westrich, MD

Assessment of Musculoskeletal Infection Society Diagnostic Criteria as Predictors of Treatment Success in Hip Arthroplasty Infections Treated with Two-Stage Exchange
Andy Miller, MD, Celeste Russell, MPH, Allina Nocon, MPH, Geoffrey Westrich, MD, Michael Henry, MD

Bariatric Surgery Prior to Total Knee Arthroplasty Reduces Medication Requirements for Pain and Comorbidity Management
Peter Benotti, MD, Alexander McLawhorn, MD, MBA, Robin Scamuffa, MSc, Hsiao Carine, Eric Ammann, PhD, Jason Waggoner, PhD, Mehmet Daskiran, PhD, Jason Lerner, MBA, Stephen Johnston, MA

Can Education Mitigate the Effect of Poverty on Total Knee Replacement Outcomes?
Susan Goodman, MD, Bella Mehta, MBBS, Meng Zhang, PhD, Jackie Szymonifka, MA, Iris Navarro-Millan, MD, Joseph Nguyen, MPH, You-Yu Lee, MS, Mark Figgie, MD, Michael Parks, MD, Shirin Dey, BS, Daisy Crego, BA, Linda Russell, MD, Lisa Mandl, MD, MPH, Anne Bass, MD
Clinical Decision Rules: Any Guidance when Ordering a CT to Rule Out Pulmonary Embolism?
Linda Russell, MD, Jackie Szymonifka, MA, Alana Sigmund, MD, Shirin Dey, BS, Sarah Grond, BA, Steven Haas, MD, Anne Bass, MD

Comparison of Self-Reported Versus Actual Height and Weight in the Orthopaedic Population
Alexander Habashy, MD, Michael Casale, MD, Nicholas Kolodychuk, BS, George Chimento, MD, William Sherman, MD, Bradford Waddell, MD

Disparities in Patients' Expectations of Foot and Ankle Surgery
Mackenzie Jones, BA, Elizabeth Cody, MD, Shirin Dey, BS, Jackie Szymonifka, MA, Michael Parks, MD, Susan Goodman, MD, Scott Ellis, MD

Do Clinical Outcomes and Satisfaction Following Total Knee Arthroplasty in Physically Active Patients Match Their Expectations?
Danielle Ponzio, MD, Yuo-Yu Lee, MS, Anthony Salvatore, MS, Russell Windsor, MD

Does the Location of the Medial Parapatellar Arthrotomy Affect Intraoperative Patella Tracking?
Scott Nodzo, MD, Maximilain Kasparek, MD, Kilian Rueckl, MD, Friedrich Boettner, MD

Does Tourniquet Inflation Alter Medial and Lateral Compartment Loads During Sensor-Assisted Total Knee Arthroplasty?
Scott Nodzo, MD, Jordan Gruskay, MD, Kaitlin Carroll, BS, Peter Sculco, MD, Steven Haas, MD, Yuo-Yu Lee, MS, Alejandro Gonzalez Della Valle, MD

Dual Mobility Versus Fixed Bearing Total Hip Arthroplasty in Patients Under 55 Years of Age: A Single Institution Matched Cohort Analysis
Fiachra Rowan, MD, Anthony Salvatore, MS, Jeffrey Lange, MD, Geoffrey Westrich, MD

Hip Resurfacing to Treat Osteoarthritis in Patients with History of Childhood Hip Disease
Edwin Su, MD, Imaan Khan, MPH, Melissa Gaillard, MS, Thomas Gross, MD

Implant Survivorship in Prosthetic Joint Infection with Retained Prostheses
Alexandra Stavrakis, MD, Michael Henry, MD, Celeste Russell, MPH, Allina Nocon, MPh, Geoffrey Westrich, MD, Barry Brause, MD, Andy Miller, MD

In-Hospital Morbidity and Postoperative Revisions Following Direct Anterior versus Posterior Total Hip Arthroplasty
Danielle Ponzio, MD, Lazaros Poultsides MD, Anthony Salvatore, MS, Yuo-Yu Lee, MS, Stavros Memtsoudis, MD, PhD, Michael Alexiades, MD

Incidence and Risk Factors for In-Hospital Acute Kidney Injury After Total Knee Replacement Revision with Placement of an Antibiotic Cement Spacer
Zachary Berliner, MD, Andrew Mo, MD, David Porter, MD, Jamie Grossman, MD, Herbert Cooper, MD, Matthew Hepinstall, MD, Jose Rodriguez, MD, Giles Scuderi, MD

Incidence of Impingement in Dual Mobility Liners: A Retrieval Study
Trevor Scott, MD, Timothy Wright, PhD, Lydia Weitzler, MS, Geoffrey Westrich, MD

Is a “Dry-Tap” Aspiration Prior to a Second Stage Re-Implantation a Favorable Prognostic Factor for the Clearance of Periprosthetic Joint Infection?
Amir Khoshbin, MD, Chelsea Koch, BS, Allina Nocon, MPH, Michael Henry, MD, Michael Cross, MD

Low Rate of Microbiologic Relapse in Two-Stage Exchange for Hip Prosthetic Joint Infections
Michael Henry, MD, Celeste Russell, MPH, Allina Nocon, MPH, Geoffrey Westrich, MD, Barry Brause, MD, Andy Miller, MD

Measuring the Trajectory of Recovery After Total Hip Arthroplasty
Stephen Lyman, PhD, Chisa Hidaka, MD, Kara Fields, MS, Wasif Islam, BS, David Mayman, MD, Catherine MacLean, MD

Patient-Reported Outcome Measures and Revision Rates of Total Knee Arthroplasty for Posttraumatic Arthropathy Versus Osteoarthritis—A Prospective Matched Cohort Study
Amir Khoshbin, MD, Pauline Woo, Yuo-Yu Lee, MS, Amethia Joseph, Douglas Padgett, MD

Patient-Reported Outcome Measures of Total Hip Arthroplasty for Posttraumatic Arthropathy Versus Osteoarthritis—A Prospective Matched Cohort Study
Amir Khoshbin, MD, Pauline Woo, Yuo-Yu Lee, MS, Amethia Joseph, Douglas Padgett, MD

Peri-Prosthetic Fracture Rate Is High in Polished Collarless Tapered Cemented Stem for Primary Hip Arthroplasty
Trevor Scott, MD, Anthony Salvatore, MS, Yuo-Yu Lee, MS, Pauline Woo, Alejandro Gonzalez Della Valle, MD

Periprosthetic Joint Infection of the Hip: Does the Approach Make a Difference?
Georgios Triantafyllopoulos, MD, Stavros Memtsoudis, MD PhD, Haijun Wang, Yan Ma, PhD, Michael Alexiades, MD, Lazaros Poultsides, MD

Provider-Initiated Patient Satisfaction Reporting Yields Improved Physician Ratings Relative to Commercial Online Physician Rating Websites
Benjamin Ricciardi, MD, Bradford Waddell, MD, Scott Nodzo, MD, Jeffrey Lange, MD, Allina Nocon, MPH, Spencer Amundsen, MD, T. David Tarity, MD, Alexander McLawhorn, MD, MBA
Quality-Adjusted Life Years After Hip and Knee Arthroplasty
Joseph Konopka, MD, Alexander McLawhorn, MD, MBA, Yuo-Yu Lee, MS

Rates and Risk Factors of Conversion Hip Arthroplasty After Closed Reduction Percutaneous Hip Pinning for Femoral Neck Fractures—A Population Analysis
Cynthia Kahlenberg, MD, Shawn Richardson, MD, William Schairer, MD, Michael Cross, MD

Revision Total Knee Arthroplasty for Periprosthetic Joint Infection Is Associated with Increased Postoperative Morbidity and Mortality than Non-Infectious Revisions
Venkat Boddapati, BA, Michael Fu, MD, Edwin Su, MD, Alexander McLawhorn, MD, MBA

Short-Term Outcomes of HIV-infected Arthroplasty Patients on Active Treatment
Allina Nocon, MPH, Michael Henry, MD, Celeste Russell, MPH, Geoffrey Westrich, MD, Peter Sculco, MD, Andy Miller, MD

Short-Term Range of Motion Is Increased After Total Knee Arthroplasty with an Asymmetric Bicruciate Stabilized Implant
Kaitlin Carroll, BS, Peter Sculco, MD, Seth Jerabek, MD, Brian Michaels, PA-C, Richard Murphy, PA-C, David Mayman, MD

Standing to Sitting Biplanar Imaging Quantifies Change in Pelvic Tilt and Acetabular Position After Navigated Total Hip Arthroplasty
Danielle Ponzio, MD, Michael Pitta, MD, Kaitlin Carroll, BS, David Mayman, MD, Peter Sculco, MD

Surface Damage and Oxidation Are Reduced in Highly Crosslinked Polyethylene Tibial Inserts at Midterm Follow Up
Alexandra Stavrakis, MD, Lydia Weitzler, MS, Timothy Wright, PhD, Douglas Padgett, MD

The Lack of Impact of Body Mass Index on Infection for Primary Knee Replacements
Alexandra Stavrakis, MD, Michael Henry, MD, Celeste Russell, MPH, Allina Nocon, MPH, Geoffrey Westrich, MD, Andy Miller, MD

The Use of Constrained Acetabular Components to Treat Instability After Total Hip Arthroplasty
Ivan De Martino, MD, Vasileios Soranoglou, MD, Allina Nocon, MPH, Peter Sculco, MD, Mathias Bostrom MD, Thomas Sculco, MD

Total Hip Arthroplasty Patients with Fixed Spinopelvic Alignment From Standing to Sitting Are at Higher Risk of Hip Dislocation
Christina Esposito, PhD, Kaitlin Carroll, BS, Peter Sculco, MD, Douglas Padgett, MD, Seth Jerabek, MD, David Mayman, MD

Total Knee Instability After Revision for Periprosthetic Joint Infection
Yevgeniy Korshunov, MD, Zachary Berliner, MD, Herbert Cooper, MD, Matthew Hepinstall, MD, Jose Rodriguez, MD

Two-Year Follow-Up Clinical Outcomes with a Modular Dual Mobility System: A Multicenter Study
Geoffrey Westrich, MD, Zachary Post, MD, Arthur Malkani, MD, Michael Mont, MD, Ahava Muskat

Use of an Accelerometer-Based Handheld Navigation System in Direct Anterior Approach Total Hip Arthroplasty: An Initial Report
Edwin Su, MD, Imraan Khan, MPH, Cameron Kiser, PA-C

Validation of the PROMIS29 in Elective Hip and Knee Arthroplasty Patients
Lisa Mandl, MD, MPH, Charles Cornell, MD, Michael Cross, MD, Alejandro Gonzalez Della Valle, MD, Mark Figgie, MD, Seth Jerabek, MD, Mayu Sasaki, MPH, Steven Magid, MD

Who Is More Accurate: The Surgeon or Sensor?
Kaitlin Carroll, BS, Brian Michaels, PA-C, Richard Murphy, PA-C, David Mayman, MD

SPECIALTY DAY

Adult Reconstruction Knee
Alternative Bearing Surfaces
Steven Haas, MD

Lessons Learned From Difficult Cases
William Macaulay, MD, Amar Ranawat, MD, Geoffrey Westrich, MD, Peter Sharkey, MD, William Hozack, MD

The Pocket Rocket: Handheld Navigation
David Mayman, MD

When Is It Safe to Perform TKA After Steroid/HA Injection?
Thomas Sculco, MD

Adult Reconstruction Hip
Is There a Role for Computer Navigation?
Douglas Padgett, MD

Shoulder and Elbow
Periprosthetic Elbow Infections: A Completely Different Animal
Mark Figgie, MD
SYMPOSIA

Choices, Compromises, and Controversies in Total Knee Arthroplasty
Thomas Sculco, MD

Innovation, Robotics, and Digital Solutions in Arthroplasty: Evolving Role in the Operating Room and Beyond!
Douglas Padgett, MD

Performing a Revision Total Hip Arthroplasty: What You Need to Know
Douglas Padgett, MD, Geoffrey Westrich, MD

TECHNICAL SKILLS

Pros of Total Knee Arthroplasty Technology
Seth Jerabek, MD

Technology in Knee Arthroplasty
David Mayman, MD

ASK AN EXPERT

Ask an Expert—Knee
Steven Haas, MD, Paul Lachiewicz, MD

Ask an Expert—Hip & Knee
Denis Nam, MD, Jose Rodriguez, MD

Ask an Expert—Hip & Knee
Daniel Berry, MD, Thomas Sculco, MD

Department of Biomechanics

PAPER PRESENTATIONS

Anterior Cervical Discectomy and Fusion (ACDF) on Segmental Cervical Spine Motion: A Biomechanical Study
Darren Lebl, MD, Kathleen Meyers, MS, Hamidreza Jahandar, MS, Theresa Pazionis, MD, Patrick O’Leary, MD, Timothy Wright, PhD

Antioxidant Stabilized XLPE in TKA: A Retrieval Analysis
Danielle Ponzio, MD, Lydia Weitzler, MS, Christina Esposito, PhD, Timothy Wright, PhD, Douglas Padgett, MD

Failure After Modern TKA: A Prospective Study of 18,065 Knees
Michael Pitta, MD, Christina Esposito, PhD, Zhichang Lee MD, Yuo-Yu Lee, MS, Timothy Wright, PhD, Douglas Padgett, MD

Hip Flexion Increases and Spine Flexion Decreases From Standing to Sitting Position 1 Year After Patients Undergo THA
Jonathan Berliner, MD, Christina Esposito, MD, Theodore Miller, MD, Douglas Padgett, MD, David Mayman, MD, Seth Jerabek, MD

Surgical Anatomy of the Radial Nerve in the Deltopectoral Approach for Revision Shoulder Arthroplasty and Periprosthetic Fracture Fixation: A Cadaveric Study
Michael Fu, MD, MHS, Michael Hendel, MD, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

Reverse Shoulder Arthroplasty on Biconcave Glenoid Reduces the Risks of Joint Instability and Glenoid Loosening Compare to Total Shoulder Arthroplasty
Xiang Chen, MSc, Jonathan Glenday, BS, Timothy Wright, PhD, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD, Andreas Kontaxis, MSc, PhD

POSTERS

Biomechanical Comparison of Lower Trapezius Versus Latissimus Dorsi Tendon Transfers for Rotator Cuff Deficient Shoulders
Akhil Reddy, BS, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

Comparison of Contact Pressures and Ligament Isometry in Skeletally Immature MPFL Reconstruction Techniques
Sheena Black, MD, Kathleen Meyers, MS, Beth Shubin Stein, MD

Incidence of Impingement in Dual Mobility Liners: A Retrieval Study
Trevor Scott, MD, Timothy Wright, PhD, Lydia Weitzler, MS, Geoffrey Westrich, MD

Surface Damage and Oxidation Are Reduced in XLPE Tibial Inserts at Midterm Follow Up
Alexandra Stavrakis, MD, Lydia Weitzler, MS, Timothy Wright, PhD, Douglas Padgett, MD

THA Patients with Fixed Spinopelvic Alignment From Standing to Sitting Are at Higher Risk of Hip Dislocation
Christina Esposito, PhD, Kaitlin Carroll, BS, Peter Sculco, MD, Douglas Padgett, MD, Seth Jerabek, MD, David Mayman, MD
**SPECIALTY DAY**

Biomechanical Comparison of Lower Trapezius Versus Latissimus Dorsi Tendon Transfers for Rotator Cuff Deficient Shoulders  
Akhil Reddy, BS, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

XLPE and Antioxidant Poly: What Does the Data Show?  
Timothy Wright, PhD

**Foot & Ankle Service**

2-HOUR INSTRUCTIONAL COURSES

Chronic Achilles Ruptures—From Bracing to TICKET Complex Reconstruction  
Samuel Adams, Jr., MD, Scott Ellis, MD, Steven Neufeld, MD

Osteotomy and Arthrodesis of the Forefoot and Hindfoot  
Samuel Adams, Jr., MD, Scott Ellis, MD, Andrew Hsu, MD

INSTRUCTIONAL COURSES

Acute Peroneal Pathology: Tendonitis, Tears, and Dislocation  
John Kennedy, MD

Osteochondral Grafts—How, When and Why I Use Them?  
John Kennedy, MD

Osteochondral Lesions of the Talus: Current Treatment Dilemmas  
John Kennedy, MD, Eric Giza, James Stone

Peroneal Tendon Pathology: Cutting-Edge Concepts in TICKET Diagnosis and Management  
James Calder, MD, Christopher Chiodo, MD, John Kennedy, MD

MODERATORS

A Biomechanical Comparison of Syndesmotic Repair Techniques During External Rotation Stress  
Mark Drakos, MD, Ross Schumer, MD

Ankle Position During Screw Fixation of the Distal Tibiofibular Syndesmosis in a Cadaver Fracture Model: Effect on Tibiotalar Range of Motion  
Mark Drakos, MD, Ross Schumer, MD

Combined Popliteal Catheter with Single Injection Versus Continuous Infusion Saphenous Nerve Block  
Mark Drakos, MD, Ross Schumer, MD

PAPER PRESENTATIONS

Does Second Metatarsal Length Correlate with Plantar Pressure Beneath the Second Metatarsophalangeal Joint During Walking?  
Mark Drakos, MD, Ross Schumer, MD

Effect of Lateral Column Lengthening on Calcaneocuboid and Subtalar Joint Pressures  
Mark Drakos, MD, Ross Schumer, MD

Grading the Severity of Subtalar Joint Arthrosis Using Lateral Weight-Bearing Radiographs  
Mark Drakos, MD, Ross Schumer, MD

Impact of Vancomycin Treatment on Human Mesenchymal Stromal Cells During Osteogenic Differentiation  
Mark Drakos, MD, Ross Schumer, MD

Long-Term Follow Up of Revision Osteochondral Allograft Transplantation of the Ankle  
Mark Drakos, MD, Ross Schumer, MD

Prevalence of Degenerative Changes at the Metatarsal Head Sesamoid Articulation Found During Hallux Valgus Surgery  
Mark Drakos, MD, Ross Schumer, MD

Promotion of Tendon Repair Mechanisms Using Placental Derived Membranes  
Mark Drakos, MD, Ross Schumer, MD

Reading the Future: Predicting Who Will Benefit From Bunion Surgery  
Mark Drakos, MD, Ross Schumer, MD

Risk Factors for Skeletal Osteoporosis on Foot X-rays  
Mark Drakos, MD, Ross Schumer, MD

The Dynamic Function of the Syndesmosis: 3-Dimensional (3D) Measurement of Tibiofibular and Medial Clear Space During Extreme Athletic Activities  
Mark Drakos, MD, Ross Schumer, MD

Total Ankle Arthroplasty Versus Ankle Arthrodesis: A Comparative Study of Proportional Hazard Modeling, Survivorship, and Functional Outcomes  
Mark Drakos, MD, Ross Schumer, MD

Accuracy of Patient Specific Instrumentation in Total Ankle Arthroplasty: A Comparative Study  
Guilherme Honda Saito, MD, Austin Sanders, BA, Scott Ellis, MD, Martin O’Malley, MD, Jonathan Deland, MD, Constantine Demetracopoulos, MD
Ankle Arthroscopy for Diagnosis and Treatment of Full Thickness Cartilage Lesions in the Setting of Ankle Fractures
Rachel daCunha, MD, Sydney Karnovsky, BA, William Schairer, MD, Mark Drakos, MD

Long-Term Outcomes of Autologous Osteochondral Transplantation for Osteochondral Lesions of the Talus: Eight to Twelve Years Follow Up (Sports Medicine IX)
Yoshiharu Shimozono, MD, Youichi Yasui, MD, John Kennedy, MD

Subchondral Bone Degradation Following Microfracture for Osteochondral Lesions of the Talus: An MRI Analysis (Foot and Ankle II)
Yoshiharu Shimozono, MD, Max Coale, BA, Youichi Yasui, MD, Timothy Deyer, MD, John Kennedy, MD

POSTERS
Knee Donor-Site Morbidity Following Autologous Osteochondral Transplantation for Osteochondral Lesions of the Talus: A Systematic Review (Sports Medicine Poster Session II)
Yoshiharu Shimozono, MD, Dexter Seow, Youichi Yasui, MD, John Kennedy, MD

INSTRUCTIONAL COURSES
Common Conditions Affecting the Ulnar Side of the Wrist: Demystifying Ulnar Wrist Pain
Ryan Calfee, MD, Abhinav Chhabra, MD, Greg Couzens, William Geissler, MD, Guillaume Herzberg, MD, Peter Jebson, MD, Robin Kamal, MD, Steve Lee, MD, Marc Richard, MD, Michael Sandow, MD

PAPER PRESENTATIONS
Analysis of Fragility Index in Hand Surgery Randomized Controlled Trials: An Additional Metric to Explore the Robustness of Study Conclusions
Joseph Ruzbarsky, MD, Sariah Khormaei, MD, Aaron Daluiski, MD

Hand & Upper Extremity Service

2-HOUR INSTRUCTIONAL COURSE
Reevaluation of the Scaphoid Fracture: What Is the Current Best Evidence?
Geert Buijze, MD, A. Lee Osterman, MD, Scott Wolfe, MD

CASE PRESENTATION
Rescuing the Elbow
Julie Adams, MD, George Athwal, MD, Neal Chen, MD, Douglas Hanel, MD, Robert Hotchkiss, MD, Graham King, MD, Michael McKee, MD, Jorge Orbay, MD, Joaquin Sanchez-Sotelo, MD, Scott Steinmann, MD

INSTRUCTIONAL COURSES
Sports Injuries of the Hand, Wrist, and Elbow
Christopher Dy, MD, Daniel Osei, MD, Lindley Wall, MD

PAPER PRESENTATIONS
Opioid Prescriber Education and Guidelines Decreases Opioids Prescribed After Ambulatory Hand Surgery
Jeffrey Stepan MD, Ajay Premkumar, MD, Francis Lovecchio, MD, Michael Fu, MD, Peter Grimaldi, PA-C, Peter Derman, MD, Duretti Fufa, MD, Daniel Osei, MD

Quantitative and Qualitative Evaluation of the Relative Arterial Contributions to the Scaphoid
Duretti Fufa, MD, Johanna Charlotte Emilie Donders, MD, Craig Klinger, BA, Lionel Lazaro, MD, Jordan Villa, MD, David Helfet, MD, Dean Lorich, MD
POSTER

Biomechanical Testing of Scapholunate Reconstruction with Internal Brace versus Scapholunate Repair
Steven Lee, MD, Ryan Coyle, MD, David Porter, MD, Ian Kremenic, MD

SYMPOSIUM

Elbows Gone Bad: How to Treat Failed Elbow Surgery
Julie Adams, MD, Mark Cohen, MD, Robert Hotchkiss, MD, Jesse Jupiter, MD, ASES, Graham King, MD, Michael McKee, MD, Mark Mighell, MD, Mark Morrey, MD, Joaquin Sanchez-Sotelo, MD

Hip Preservation Service

CASE PRESENTATION

Adolescent Hip Pain: A Case-Based Approach to Common Causes
Ernest Sink, MD

PAPER PRESENTATIONS

Computerized Adaptive Testing for Patient Reporting Outcomes in Ankle Fracture Surgery
Elizabeth Gausden, MD, Ashley Levack, MD, Benedict Nwachukwu, MD, Danielle Sin, MS, David Wellman, MD, Dean Lorich, MD

Long-Term Functional and Radiological Outcomes of Operatively Treated Schatzker Type II Tibial Plateau Fractures
Johanna Charlotte Emilie Donders, MD, Diren Arsoy, MD, Laura Kleeblad, MD, Camden Tissue MD, David Helfet, MD, David Wellman, MD

Long-Term Survivorship, Radiologic and Functional Outcomes of Operatively Treated Tibial Plateau Fractures
Diren Arsoy, MD, Johanna Charlotte Emilie Donders, MD, Laura Kleeblad, MD, David Wellman, MD, David Helfet, MD

Mechanism, Presentation, Injury Pattern, and Associated Injuries for Multiple Ligament Knee Injuries (MLKIs): A Multicenter Study From the Surgical Timing and Rehabilitation Trial for MLKIs Network
James Irrgang, PhD, Andrew Lynch, PhD, Travis Burns, MD, Christopher Harner, MD, Bruce Levy, MD, Brett Owens, MD, Robert Schenck, MD, Volker Musahl, MD, Alicia Oostdyk, MPH, Adam Popchak, DPT, Jeremy Burnham, MD, Charity Moore, PhD, Alan Getgood, MD, Jonathan Hodax, MD, Jonathan Cooper, DO, Anil Ranawat, MD, Robert Marx, MD, MSc, FRCS, Catherine Coady, FRCS (Ortho), Ivan Wong, MD, Jeffrey Macalena, MD, Bradley Nelson, MD, Robert Arciero, MD, Cory Edgar, MD, Mark Cote, PT, Darren Johnson, MD, Cale Jacobs, PhD, Dustin Richter, MD, Gehron Treme, MD, Andrew Veitch, MD, Daniel Wascher, MD, Brandee Black, MD, Lane Bailey, PhD, Mark Miller, MD, Joe Hart, PhD

Narcotic Prescribing Education Program and Standardized Service Guidelines Change Prescribing Practices After Arthroscopic Knee Surgery
Jeffrey Stepan, MD, Michael Fu, MD, Francis Lovecchio, MD, Ajay Premkumar, MD, Peter Grimaldi, PA-C, Peter Derman, MD, Samuel Taylor, MD, Anil Ranawat, MD

Objective Analysis of Capitellum Exposure for Autologous Osteochondral Reconstruction
Christine Johnson, MD, Susanne Roberts, MD, Douglas Mintz, MD, Peter Fabricant, MD, MPH, Robert Hotchkiss, MD, Aaron Daluiski, MD

Predicting Injury Through Quantitative Analysis of Professional Baseball Pitcher Mechanics
Edward Sutter, MD, Justin Orenduff, BS, Will Fox, BA, Joshua Myers, Grant Garrigues, MD

Prior Hip Arthroscopy Does Not Affect Clinical Outcomes Following Total Hip Arthroplasty: An Institutional, Matched Cohort Study
Lazaros Poultsides, MD, Branden Sosa, Yuo-Yu Lee, MS, Kathryn Oi, BA, Robert Buly, MD

Quantitative and Qualitative Evaluation of the Relative Arterial Contributions to the Scaphoid
Duretti Fufa, MD, Johanna Charlotte Emilie Donders, MD, Craig Klinger, BA, Lionel Lazaro, MD, Jordan Villa, MD, David Helfet, MD, Dean Lorich, MD

The Location of Anterior Cruciate Ligament Tears: A Prevalence Study Using Magnetic Resonance Imaging
Jelle Van Der List, MD, Douglas Mintz, MD, Gregory DiFelice, MD

POSTERS

Acetabular Version and Acetabular Coverage Measurements Have Clinically Relevant Associations with Pelvic Incidence and Pelvic Tilt in Patients Treated for Femoroacetabular Impingement
Graeme Whyte, FRCS, Aaron Buckland, FRACS, Douglas Mintz, MD, Ernest Sink, MD, Struan Coleman MD, PhD, Robert Buly, MD

A Retrospective Review of Radiographic and Clinical Characteristics Associated with a Positive Prone Apprehension Relocation Test: A New Provocative Exam to Elicit Hip Instability
Andrea Spiker, MD, Alexandra Wong, BS, Joash Suryavanshi, BA, Peter Fabricant, MD, MPH, Ernest Sink, MD
Radiographic and Clinical Outcomes of Periprosthetic Distal Femur Fractures Treated with Open Reduction Internal Fixation Using Lateral Locked Plating
Alexander Christ, MD, Harshvardhan Chawla, MD, Elizabeth Gausden, MD, Jordan Villa, MD, David Wellman, MD, Dean Lorich, MD, David Helfet, MD

SPECIALTY DAY
Session VII: Expert Panel: How I Learned From My Tough Cases
David Wellman, MD

TECHNICAL SKILLS
Issues of Alignment and Tibial Slope: When to Address and How?
Anil Ranawat, MD

Metabolic Bone Disease/ Musculoskeletal Oncology Service

2-HOUR INSTRUCTIONAL COURSES
The Answer Is Vitamin D! From Pediatrics to Geriatrics in Orthopaedics
Joseph Lane, MD

Is Medical Clearance Enough? Understanding Medical Issues that Can Affect Your Patients’ Outcomes
Moderator: Joseph Lane, MD
Charles Cornell, MD

PAPER PRESENTATION
Is Frailty Associated with Adverse Events After Total Joint Arthroplasty?
Lisa Mandl, MD, MPH, Abigail Schmucker, BA, Charles Cornell, MD, Michael Cross, MD, Alejandro Gonzalez Della Valle, MD, Mark Figgie, MD, Seth Jerabek, MD, Jackie Szymonifka, MA, Steven Magid, MD

SYMPOSIUM
Secondary Fracture Prevention
Joseph Lane, MD

Orthopaedic Trauma Service

2-HOUR INSTRUCTIONAL COURSE
Goals and Osteoporotic Drug Choices
Joseph Lane, MD

MODERATOR
Is Medical Clearance Enough? Understanding Medical Issues that Can Affect Your Patients’ Outcomes
Joseph Lane, MD

SPECIALTY DAY
OTA Welcome—Specialty Day
William Ricci, MD

OTA Members—Only Business Meeting
William Ricci, MD

Fixation Techniques for Vancouver B Fractures Periprosthetic Cases
William Ricci, MD

Role of Revision Arthroplasty in Vancouver B Fractures
William Ricci, MD

Tips for Management of Distal Femur Periprosthetic Fractures
William Ricci, MD

Closing Remarks and Adjourn
William Ricci, MD

PAPER PRESENTATIONS
Arthroscopic Primary Repair of Proximal Anterior Cruciate Ligament Tears: No Deterioration at Mid-Term Follow Up
Jelle Van Der List, MD, Gregory DiFelice, MD

Bovill Award Paper Presentation Introduction
William Ricci, MD

Computerized Adaptive Testing for Patient Reporting Outcomes in Ankle Fracture Surgery
Elizabeth Gausden, MD, Ashley Levack, MD, Benedict Nwachukwu, MD, Danielle Sin, MS, David Wellman, MD, Dean Lorich, MD
Long-Term Functional and Radiological Outcomes of Operatively Treated Schatzker Type II Tibial Plateau Fractures
Diren Arsoy, MD, Johanna Charlotte Emilie Donders, MD, Laura Kleeblad, MD, David Wellman, MD, David Helfet, MD

Long-Term Survivorship, Radiologic and Functional Outcomes of Operatively Treated Tibial Plateau Fractures
Johanna Charlotte Emilie Donders, MD, Diren Arsoy, MD, Laura Kleeblad, MD, Camden Tissue, MD, David Helfet, MD, David Wellman, MD

Opioid Prescriber Education and Guidelines Decreases Opioids Prescribed After Ambulatory Hand Surgery
Jeffrey Stepan, MD, Ajay Premkumar, MD, Francis Lovecchio, MD, Michael Fu, MD, Peter Grimaldi, PA-C, Peter Derman, MD, Duretti Fufa, MD, Daniel Osei, MD

Osseous Vascularity of the Medial Elbow Following Ulnar Collateral Ligament Reconstruction: A Comparison of the Docking and Modified Jobe Techniques
Christopher Camp, MD, Craig Klinger, BA, Lionel Lazaro, MD, Jordan Villa, MD, Jelle Van Der List, MD, David Altchek, MD, Dean Lorich, MD, Joshua Dines, MD

Posterior Malleolus Fracture Displacement Is Associated with Supination External Rotation Ankle Fracture Classification
Ashley Levack, MD, Elizabeth Gausden, MD, Aleksey Dvorzhinskiy, MD, Dean Lorich, MD

Quantitative and Qualitative Evaluation of the Relative Arterial Contributions to the Scaphoid
Duretti Fufa, MD, Johanna Charlotte Emilie Donders, MD, Craig Klinger, BA, Lionel Lazaro, MD, Jordan Villa, MD, David Helfet, MD, Dean Lorich, MD

The Location of Anterior Cruciate Ligament Tears: A Prevalence Study Using Magnetic Resonance Imaging
Jelle Van Der List, MD, Douglas Mintz, MD, Gregory DiFelice, MD

SCIENTIFIC EXHIBIT
Important Considerations in the Treatment of Young Femoral Neck Fractures
Ashley Levack, MD, Lionel Lazaro, MD, Elizabeth Gausden, MD, Alexander Christ, MD, Aleksey Dvorzhinskiy, MD, Dean Lorich, MD

SPECIALTY DAY
Tough Case 3—Comminuted Proximal Forearm/Olecranon Fracture
David Wellman, MD

SYMPOSIUM
Secondary Fracture Prevention
Joseph Lane, MD

Pediatric Orthopaedic Service

CASE PRESENTATIONS
Adolescent Hip Pain: A Case-Based Approach to Common Causes
Ernest Sink, MD

Principles of Management of Common Pediatric Sports Injuries
Daniel Green, MD, MS, FAAP, FACS

PAPER PRESENTATIONS
Comparative Effectiveness of Cartilage Repair with Respect to Minimal Clinically Important Difference
Benjamin Kelley, MD, Armin Arshi, MD, Peter Fabricant, MD, MPH, David McAllister, MD, Kristofer Jones, MD
Normative Athletic Activity Level Data in Children and Adolescents: A Cross-Sectional Study of 2,002 American Youth
Peter Fabricant, MD, MPH, Joash Suryavanshi, BA, Jacob Calcei, MD, Robert Marx, MD, MSc, FRCSC, Roger Widmann, MD, Daniel Green, MD, MS, FAAP, FACS

Objective Analysis of Capitellum Exposure for Autologous Osteochondral Reconstruction
Christine Johnson, MD, Susanne Roberts, MD, Douglas Mintz, MD, Peter Fabricant, MD, MPH, Robert Hotchkiss, MD, Aaron Daluiski, MD

Return to Sport and Reoperation Rates in Patients Under the Age of 20 Following Primary Anterior Cruciate Ligament Reconstruction: Risk Profile Comparing Three Patient Groups Predicated Upon Skeletal Age
Sheena Black, MD, Meghan Price, BS, Daniel Green, MD, MS, FAAP, FACS, Frank Cordasco, MD, MS

POSTERS

Acetabular Version and Acetabular Coverage Measurements Have Clinically Relevant Associations with Pelvic Incidence and Pelvic Tilt in Patients Treated for Femoroacetabular Impingement
Graeme Whyte, FRCSC, Aaron Buckland, FRACS, Douglas Mintz, MD, Ernest Sink, MD, Struan Coleman, MD, PhD, Robert Buly, MD

A Retrospective Review of Radiographic and Clinical Characteristics Associated with a Positive Prone Apprehension Relocation Test: A New Provocative Exam to Elicit Hip Instability
Andrea Spiker, MD, Alexandra Wong, BS, Joash Suryavanshi, BA, Peter Fabricant, MD, MPH, Ernest Sink, MD

Axial Width of Patellar Tendon Beyond Lateral Trochlear Ridge: A Novel Measurement of Patellofemoral Instability
Justin Mistovich, MD, John Urwin, BS, Peter Fabricant, MD, MPH, John Todd Lawrence, MD

Biomechanical Comparison of Two Different Blade Plate Designs in Simulated Proximal Femoral Varus Osteotomies
Joseph Ruzbarsky, MD, Ishaan Swarup, MD, Matthew Garner, MD, Kathleen Meyers, MS, Folorunsho Edobor-osa, MD, Roger Widmann, MD, David Scher, MD

Range of Motion Improvement Following Surgical Management of Knee Arthrofibrosis in Children and Adolescents
Peter Fabricant, MD, MPH, Frances Tepolt, MD, Mininder Kocher, MD

Variation in the Medial Patellofemoral Ligament Origin in the Skeletally Immature Knee—An Anatomic Study
Kevin Shea, MD, William Martinson, Peter Cannamela, BS, Connor Richmond, BS, Peter Fabricant, MD, MPH, Allen Anderson, MD, John Polousky, MD, Theodore Ganley, MD

TECHNICAL SKILLS

Surgical Techniques for Skeletally Immature Anterior Cruciate Ligament
Daniel Green, MD, MS, FAAP, FACS

Radiology & Imaging

INSTRUCTIONAL COURSE

MRI of the Spine: Essentials for the Orthopaedic Surgeon
Darryl Sneag, MD

PAPER PRESENTATIONS

A Novel Quantitative Computed Tomography Bone Mineral Density Assessment of the Sacrum Does Not Predict Sacral Fractures Following Instrumented Spinal Fusion
Stephan Salzmann, MD, Courtney Ortiz Miller, BA, John Carrino, MD, Jingyan Yang, MS, Jennifer Shue, MS, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

Hip Flexion Increases and Spine Flexion Decreases From Standing to Sitting Position 1 Year After Patient Undergo Total Hip Arthroplasty
Johnathan Berliner, MD, Christina Esposito, PhD, Theodore Miller, MD, Douglas Padgett, MD, David Mayman, MD, Seth Jerabek, MD

Objective Analysis of Capitellum Exposure for Autologous Osteochondral Reconstruction
Christine Johnson, MD, Susanne Roberts, MD, Douglas Mintz, MD, Peter Fabricant, MD, MPH, Robert Hotchkiss, MD, Aaron Daluiski, MD

The Location of Anterior Cruciate Ligament Tears: A Prevalence Study Using Magnetic Resonance Imaging
Jelle Van Der List, MD, Douglas Mintz MD, Gregory DiFelice, MD

POSTERS

A 15-Year Experience of Risk Factors for Motor Neuropathy After Total Knee Arthroplasty
Teena Shetty, MD, Joseph Nguyen, MPH, Mayu Sasaki, MPH, Anita Wu, MD, Eric Bogner, MD, Alissa Burge, MD, Aashka Dalal, BA, Edwin Su, MD, Stephen Lyman, PhD
Acetabular Version and Acetabular Coverage Measurements Have Clinically Relevant Associations with Pelvic Incidence and Pelvic Tilt in Patients Treated for Femoroacetabular Impingement
Graeme Whyte, FRCSC, Aaron Buckland, FRACS, Douglas Mintz, MD, Ernest Sink, MD, Struan Coleman, MD, PhD, Robert Buly, MD

Does Local Intraoperative Corticosteroids Delivered in a Gel-Matrix Minimize Dysphagia Following Anterior Discectomy and Fusion? A Preliminary Analysis of An Ongoing Double Blinded Randomized Controlled Trial
Daniel Stein, BS, Han Jo Kim, MD, Darren Lebl, MD, Russel Huang, MD, Shari Jawetz, MD, Okezie Aguwa, MD, Virginie Lafage, PhD, Todd Albert, MD

Rehabilitation

PAPER PRESENTATION
Reverse Shoulder Arthroplasty on Biconcave Glenoid Reduces the Risks of Joint Instability and Glenoid Loosening Compare to Total Shoulder Arthroplasty
Xiang Chen, MSc, Jonathan Glenday, MSc, Timothy Wright, PhD, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD, Andreas Kontaxis, MSc, PhD

POSTER
Biomechanical Comparison of Lower Trapezius Versus Latissimus Dorsi Tendon Transfers
Akhil Reddy, Lawrence Gulotta, MD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Alessandro Castagna, MD, Andreas Kontaxis, MSc, PhD

SPECIALTY DAY
Biomechanics of Lower Trapezius and Latissimus Dorsi Transfers in Rotator Cuff Deficient Shoulders
Akhil Reddy, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

Research

PAPER PRESENTATION
Kartogenin Enhances Collagen Organization and Mechanical Strength of the Repaired Enthesis in a Murine Model of Rotator Cuff Repair
Dean Wang, MD, Hongbo Tan, PhD, Amir Lebaschi, MD, Patrick Donnelly, PhD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

Pilot Study Examining the Feasibility and Safety of Using Bone Marrow Aspirate Concentrate in Improving Rotator Cuff Tendon Healing Following Arthroscopic Rotator Cuff Repair
Camila Carballo, PhD, Michael Schaer, MD, Joseph Nguyen, MPH, Arielle Hall, BS, Lilly Ying, Hollis Potter, MD, Russell Warren, MD, Scott Rodeo, MD

PODIUM
Incorporating Biologics Into Your Practice: The New Horizon in Sports Medicine: Current Research and What the Future May Hold
Scott Rodeo, MD (Instructional Course Lecture)

Tibial Proximal Metaphyseal and Shaft Stress Fractures
Scott Rodeo, MD (Instructional Course Lecture)

POSTERS
Bone Bruise and Knee Instability in Anterior Cruciate Ligament Ruptures: Association Between Magnetic Resonance Imaging Signs and Joint Laxity
Ricardo Bastos, MD, PhD, Scott Rodeo, MD

Combined Local and Systemic Antibiotics Fail to Eradicate Periprosthetic Joint Infection in a Murine Model
Matthew Shirley, BS, Gang Ji, MD, Joseph Koressel, MS, Alberto Carli, MD, F. Patrick Ross, PhD, Marjolein Van Der Meulen, PhD, Christopher Hernandez, PhD, Xu Yang, MD, Mathias Boström, MD

Comparison of Bone Tunnel and Cortical Surface Tendon-to-Bone Healing in a Rabbit Biceps Tenodesis Model
Dean Wang, MD, Hongbo Tan, PhD, Amir Lebaschi, MD, Ian Hutchinson, MD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD, Russell Warren, MD

Evaluation of Bone Formation with Micro-Computed Tomography After Biceps Tenodesis in a Rabbit Model: Comparison of Bone Tunnel and Cortical Surface Fixation Techniques
Dean Wang, MD, Amir Lebaschi, MD, Hongbo Tan, PhD, Ian Hutchinson, MD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD, Russell Warren, MD
SCIENTIFIC EXHIBITS

Orthobiologics for Upper Extremity Disorders: What Is the Evidence?  
Scott Rodeo, MD

Eoghan Hurley, Charles Hannond, MD, Christopher Murawski, Niall Smyth, MD, Michael Hendel, MD, John Kennedy, MD, Brian Cole, MD, Scott Rodeo, MD, Cathal Moran, MD

Team Physician: Pre-Participation Physicals to Sideline Management and Everything in Between  
Jacob Calcei, MD, Joseph Ruzbarsky, MD, Evan O'Donnell, MD, Keith Corpus, MD, Ryan Rauck, MD, Russell Warren, MD, Scott Rodeo, MD, James Kinderknecht, MD, Samuel Taylor, MD

SYMPOSIA

AAOS President’s Symposia: Current Status of PRP  
Scott Rodeo, MD

Biologics—PRP and Stem Cells  
Scott Rodeo, MD

The Way I See It: The Use of Biologic Augmentation Techniques to Improve Tissue Healing and Regeneration  
Scott Rodeo, MD

Spine Service

MODERATOR

Spine V (520-528)—Paper Presentations  
Sheeraz Qureshi, MD, Daniel Park, MD

PAPER PRESENTATIONS

A Novel Quantitative Computed Tomography Bone Mineral Density Assessment of the Sacrum Does Not Predict Sacral Fractures Following Instrumented Spinal Fusion  
Stephan Salzmann, MD, Courtney Ortiz Miller, BA, John Carrino, MD, MPH, Jingyin Yang, MHS, Jennifer Shue, MS, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, Alexander Hughes, MD

Adult Spinal Surgery in Patients with Previous Total Hip Arthroplasty: Should We Fuse the Spine First?  
Bassel Diebo, MD, George Beyer, BA, Qais Naziri, MD, Preston Grieco, MD, Roby Abraham, MD, Aditya Maheshwari, MD, Virginie Lafage, PhD, Frank Schwab, MD, Carl Paulino, MD

Anterior Cervical Disectomy and Fusion on Segmental Cervical Spine Motion: A Biomechanical Study  
Darren Lebl, MD, Kathleen Meyers, MS, Hamidreza Jahandar, MS, Theresa Pazzionis, MS, Patrick O’Leary, MD, Timothy Wright, PhD

Dynamic, Three-Dimensional Analysis of Gait Patterns Before and After Adolescent Idiopathic Scoliosis Surgery  
Bassel Diebo, MD, Jeffrey Varghese, BS, Renaud Lafage, Ziad Bakouny, MSc, Ayman Assi, PhD, Ellen Godwin, PT, Virginie Lafage, PhD, Frank Schwab, MD, Carl Paulino, MD

Planned Staging of Complex Adult Spinal Deformity Surgery Does Not Result in Increased Length of Stay or Increased Cost  
Jeffrey Gum, MD, Amit Jain, MD, Leah Carreon, MD, Richard Hostin, MD, Samrat Yeramaneni, MBBS, Steven Glassman, MD, Michael Kelly, MD, Douglas Burton, MD, David Polly Jr., MD, Justin Smith, MD, Christopher Shaffrey, MD, Frank Schwab, MD, Rajiv Sethi, MD, Brian Neuman, MD, Christopher Ames, MD, Robert Bess, MD, International Spine Study Group

Prospective Multicenter Analysis of Clinical and Radiographic Outcomes Following Surgical Correction of Patients with Moderate to Severe Cervical Deformities and Horizontal Gaze Disruption  
Themistocles Protopsaltis, MD, Subaraman Ramchandran, MBBS, Jared Tishelman, Justin Smith, MD, Daniel Sciuubba, MD, Peter Passias, MD, Renaud Lafage, Eric Klineberg, MD, Virginie Lafage, PhD, Robert Hart, MD, Douglas Burton, MD, Christopher Shaffrey, MD, Frank Schwab, MD, Christopher Ames, MD, International Spine Study Group

Recurrent Proximal Junctional Kyphosis: Incidence, Risk Factors, Revision Rates, and Outcomes at Two-Year Minimum Follow Up  
Han Jo Kim, MD, Shan-Jin Wang, Okezie Agwu, MD, Renaud Lafage, Christopher Shaffrey, MD, Gregory Mundis, MD, Richard Hostin, MD, Douglas Burton, MD, Christopher Ames, MD, Eric Klineberg, MD, Munish Gupta, MD, Justin Smith, MD, Frank Schwab, MD, Virginie Lafage, PhD

Should Targets for Adult Spinal Deformity Correction Depend on Pelvic Incidence?  
Themistocles Protopsaltis, MD, Alexandra Soroceanu, MD, Jared Tishelman, Aaron Buckland, FRACS, Gregory Mundis, MD, Justin Smith, MD, Alan Daniels, MD, Lawrence Lenke, MD, Han Jo Kim, MD, Eric Klineberg, MD, Christopher Ames, MD, Robert Hart, MD, Robert Bess, MD, Christopher Shaffrey, MD, Frank Schwab, MD, Virginie Lafage, PhD, International Spine Study Group

Spine Flexibility Predicts the Postoperative Proximal Junctional Angle in Adult Spinal Deformity Patients  
Jeffrey Varghese, BS, Hongda Bao, MD, Jonathan Elysee, Tejibir Pannu, MD, Renaud Lafage, Virginie Lafage, PhD, Han Jo Kim, MD
The Impact of Mental Health Disorders on Complications Following Cervical Spine Surgery with Minimum Two-Year Surveillance
Bassel Diebo, MD, Shian Liu, MD, Joshua Lavian, BA, Neil Shah, MD, Qais Naziri, MD, Virginie Lafage, PhD, Frank Schwab, MD, Peter Passias, MD, Carl Paulino, MD

The Importance of C2-Slope, a Singular Marker of Cervical Deformity, Correlates with Patient Reported Outcomes
Themistocles Protopsaltis, MD, Subaraman Ramchandran, MBBS, Jared Tishelman, Justin Smith, MD, Brian Neuman, MD, Gregory Mundis, MD, Renaud Lafage, Eric Klineberg, MD, D. Kojo Hamilton, Virginie Lafage, PhD, Munish Gupta, MD, Robert Hart, MD, Frank Schwab, MD, Douglas Burton, MD, Robert Bess, MD, Christopher Shaffrey, MD, Christopher Ames, MD, International Spine Study Group

What Are the Risk Factors for Surgical Site Infection After Spinal Arthrodesis? A Meta-Analysis
Sébastien Pesenti, MD, Tejbir Pannu, MD, Jessica Andres-Bergos, PhD, Justin Smith, MD, Steven Glassman, MD, Ferran Pellise, MD, Marinus De Kleuver, MD, Virginie Lafage, PhD, Frank Schwab, MD

POSTERS
Analysis of Prospective Collection of 374 Osteotomies in 99 Patients with Adult Cervical Deformity
Themistocles Protopsaltis, MD, Alexandra Soroceanu, MD, Justin Smith, MD, Munish Gupta, MD, Renaud Lafage, Peter Passias, MD, D. Kojo Hamilton, Eric Klineberg, MD, Virginie Lafage, PhD, Frank Schwab, MD, Douglas Burton, MD, Robert Bess, MD, Christopher Shaffrey, MD, Christopher Ames, MD, International Spine Study Group

Categorizing the Hip-Spine Syndrome: A Step Toward a Collaborative Multi-Disciplinary Classification
Bassel Diebo, MD, Louis Day, MD, Renaud Lafage, Peter Passias, MD, Carl Paulino, MD, Thomas Errico, MD, Frank Schwab, MD, Virginie Lafage, PhD

Does Local Intraoperative Corticosteroids Delivered in a Gel-Matrix Minimize Dysphagia Following Anterior Discectomy and Fusion? A Preliminary Analysis of An Ongoing Double Blinded Randomized Controlled Trial
Daniel Stein, BS, Han Jo Kim, MD, Darren Lebl, MD, Russel Huang, MD, Shari Jawetz, MD, Okezie Aguwa, MD, Virginie Lafage, PhD, Todd Albert, MD

Does the Use of an Interbody Fusion at the Osteotomy Site Limit the Loss of Correction After 3 Column Osteotomy in Adult Spinal Deformity?
Hongda Bao, MD, Jeffrey Varghese, BS, Han Jo Kim, MD, Munish Gupta, MD, Christopher Shaffrey, MD, Justin Smith, MD, Gregory Mundis, MD, Richard Hostin, MD, Douglas Burton, MD, Christopher Ames, MD, Eric Klineberg, MD, Robert Bess, MD, Frank Schwab, MD, Virginie Lafage, PhD

Missing Data Treatments Matter: An Analysis of Multiple Imputation for Anterior Cervical Discectomy and Fusion Procedures
Nathaniel Ondeck, BS, Michael Fu, MD, Laura Skrip, MPH, Ryan McLynn, BS, Jonathan Cui, BS, Bryce Basques, MD, Todd Albert, MD, Jonathan Grauer, MD

Should Decision Making for Lower Instrumented Vertebra Selection Go Beyond Traditional Classification of Adolescent Idiopathic Scoliosis? A Dynamic Three-Dimensional Gait Assessment
Bassel Diebo, MD, Ashish Patel, MD, Jeffrey Varghese, BS, Neil Shah, MD, Ayman Assi, PhD, Ellen Godwin, PT, Virginie Lafage, PhD, Frank Schwab, MD, Carl Paulino, MD

The Effectiveness of Standard Surgical Preparation in Spine Surgery When Eradicating Occult Pathogens Dwelling in Skin
Christina Dow, BS, Tucker Callanan, BS, Darren Lebl, MD, Frank Cammisa, MD, Celeste Abjornson, PhD

The Relationship Between Improvements in Myelopathy and Sagittal Realignment in Cervical Deformity Surgery
Peter Passias, MD, Samantha Horn, BA, Subaraman Ramchandran, MBBS, Douglas Burton, MD, Themistocles Protopsaltis, MD, Renaud Lafage, Virginie Lafage, PhD, Bassel Diebo, MD, Gregory Poorman, BA, Justin Smith, MD, Christopher Ames, MD, Christopher Shaffrey, MD, Han Jo Kim, MD, Brian Neuman, MD, Alan Daniels, MD, Alexandra Soroceanu, MD, Eric Klineberg, MD, International Spine Study Group

SPECIALTY DAY
Assembling Superior Team to Minimize Complications and Maximize Surgical Outcomes
Todd Albert, MD

Instrumentation Issues, Inoperative Imaging, Navigation, Robotics
Sheeraz Qureshi, MD

Steroid Injections for Cervical Stenosis—Steroid Injections Are Useful Prior to Surgery
Sheeraz Qureshi, MD

SYMPOSIUM
New Paradigms in Global Spine Care: Newborn to Elderly
Todd Albert, MD

TECHNICAL SKILLS
Pragmatic Learning for New Techniques and Technologies in Spine Surgery
Sheeraz Qureshi, MD
# Sports Medicine Service

## 2-HOUR INSTRUCTIONAL COURSES

**Current Research and What the Future May Hold?**  
Scott Rodeo, MD

**Optimizing Anterior Cruciate Ligament (ACL) Outcomes: What Else Needs Fixing Besides the ACL?**  
Sabrina Strickland, MD

**Stress Fractures About the Tibia**  
Scott Rodeo, MD

### CASE PRESENTATIONS

**Complete Meniscal and Articular Cartilage Cases—Scratching the Surface**  
Robert Marx, MD, MSc, FRCSC

**Complex Shoulder Arthroplasty: Primary and Revision, Anatomic and Reverse, Three-Dimensional Planning—When and How**  
David Dines, MD, Joshua Dines, MD

**Multiple Knee Injuries—What Would You Do?**  
Robert Marx, MD, MSc, FRCSC

**Unrecognized FCL/Posterolateral Deficiency in the Setting of the Failed ACL Reconstruction**  
Robert Marx, MD, MSc, FRCSC

### INSTRUCTIONAL COURSE

**Peripheral Nerve Issues After Common Orthopaedic Surgeries**  
Moira McCarthy, MD

### MODERATOR

**Patellar Instability and Dislocation: Optimizing Surgical Treatment and How to Avoid Complications**  
Sabrina Strickland, MD

### ORTHOPAEDIC VIDEO LIBRARY

**Arthroscopic Microfracture for Osteochondritis Dissecans Lesions of the Capitellum**  
Christopher Camp, MD, Venkat Bodnapati, BA, Joshua Dines, MD, Ryan Degen, MD, MSc, FRCSC, Alec Sinatra, BA, David Altchek, MD

**Basics of Elbow Arthroscopy**  
Christopher Camp, MD, Venkat Bodnapati, BA, Ryan Degen, MD, MSc, FRCSC, Joaquin Sanchez-Sotelo, MD, David Altchek, MD, Joshua Dines, MD

**Ulnar Collateral Ligament Reconstruction of the Elbow: The Docking Technique**  
Christopher Camp, MD, Venkat Bodnapati, BA, Joshua Dines, MD, Pramod Voleti, MD, Evan James, MD, David Altchek, MD

### PAPER PRESENTATIONS

**A Cadaveric, Biomechanics Study Comparing Subacromial Balloon Spacer to Superior Capsular Reconstruction in the Treatment of Massive, Irreparable Rotator Cuff Tears**  
Moderators: Charles Getz, MD, David Dines, MD  
Supriya Singh, MD, George Athwal, MD, James Johnson, PhD, Jacob Reeves, MSc, G. Daniel Langohr, MSc

**An Analysis of Subacromial Bursa Versus Bone Marrow as a Source of Mesenchymal Stem Cell for Biological Augmentation**  
Moderators: Charles Getz, MD, David Dines, MD  
Daichi Morikawa, MD, Mary-Beth McCarthy, MD, Nicholas Bellas, Augustus Mazzocca, MD

**A Novel Analysis of Return-to-Play Criteria at Six Months Following Anterior Cruciate Ligament Reconstruction**  
Matthew Tao, MD, Mollyann Pais, BS, Theresa Chiaia, PT, Polly de Mille, RN, RCEP, CSCS, USAT, Joseph Nguyen, MPH, Andrew Pearle, MD, Answorth Allen, MD, David Altchek, MD, Riley Williams III, MD

**A Pilot Study Examining the Feasibility and Safety of Using Bone Marrow Aspirate Concentrate in Improving Rotator Cuff Tendon Healing Following Arthroscopic Rotator Cuff Repair**  
Moderators: Charles Getz, MD, David Dines, MD  
Camila Carballo, PhD, Michael Schaer, MD, Joseph Nguyen, MPH, Arielle Hall, BS, Lilly Ying, Hollis Potter, MD, Russell Warren, MD, Scott Rodeo, MD

**Arthroscopic Landmarks for Neuroanatomy of the Subcoracoid Space**  
Moderators: Charles Getz, MD, David Dines, MD  
Michael Knudsen, MD, Jonathan Braman, MD

**Complication Rates and Efficacy of Single-Injection Versus Continuous Interscalene Nerve Block: A Prospective Evaluation Following Primary Rotator Cuff Repair**  
Moderators: Charles Getz, MD, David Dines, MD  
John Wu, MD, Denise Koueiter, Tristan Maerz, PhD, J. Wiater, MD, Kyle Anderson, MD
Clinical and Anatomical Results of Massive Rotator Cuff Tears at 20 Years Follow Up
Moderators: Charles Getz, MD, David Dines, MD
Philippe Collin, Gilles Walch, MD, Christian Gerber, MD, Herve Thomazeau, MD, Jean Francois Kempf, MD, Michael Betz, MD

Cost of Rotator Cuff Repair Surgery: Precise Accounting of Pre-, Intra-, and Postoperative Cost of 47,554 Patients
Moderators: Charles Getz, MD, David Dines, MD
Horaroutuon Boyajian, MD, Olumuyiwa Idowu, BA, Krishna Ravella, BA, Jason Koh, MD, Michael Lee, MD, Lewis Shi, MD

Differences Between Arthroscopic and Open Rotator Cuff Repair: A Study of 47,554 Patients
Moderators: Charles Getz, MD, David Dines, MD
Krishna Ravella, BA, Haroroutuon Boyajian, MD, Olumuyiwa Idowu, BA, Jason Koh, MD, Michael Lee, MD, Lewis Shi, MD

Epidemiology and Disease Burden of Medial Epicondylitis in the US: An Analysis of 19,856 Patients
Ryan Degen, MD, MSc, FRCSC, Christopher Camp, MD, Jourdan Cancienne, MD, David Altchek, MD, Joshua Dines, MD, Brian Werner, MD

Frequency and Appropriateness of MRI Use Among Patients Presenting to a Shoulder Specialist Clinic
Moderators: Charles Getz, MD, David Dines, MD
Christopher Hawke, PT, Paul Klas, BS, Ryan Reeson, BA, Kyle Oosterman, Timothy Leroux, MD, Christian Veillette, MD

Increasing Numbers of Preoperative Shoulder Injections Are Associated with a Higher Rate of Subsequent Revision Rotator Cuff Surgery
Moderators: Charles Getz, MD, David Dines, MD
Venkat Boddapaty, BA, Christopher Camp, MD, Joshua Dines, MD, Stephen Brockmeier, MD, Brian Werner, MD

Inhibition Improves Healing in a Rat Model of Acute Rotator Cuff Repair
Moderators: Charles Getz, MD, David Dines, MD
Michael Kuenzler, MD, Michelle McGarry, MD, Masaki Akeda, MD, Hansel Ihn, MD, Agnieszka Karol, DVM, Brigitte von Rechenberg, MD, Matthias Zumstein, MD, Thay Lee, PhD

Intratendinous Injection of Autologous Adipose Tissue Derived Mesenchymal Stem Cells for the Treatment of Rotator Cuff Disease: A First-in-Human Trial
Moderators: Charles Getz, MD, David Dines, MD
Chris Jo, MD, Paul Kim, MD, Jeongyong Yoon, Jr., MD

Kartogenin Enhances Collagen Organization and Mechanical Strength of the Repaired Enthesis in a Murine Model of Rotator Cuff Repair
Moderators: Charles Getz, MD, David Dines, MD
Dean Wang, MD, Hongbo Tan, PhD, Amir Lebaschi, MD, Patrick Donnelly, PhD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

Mechanism, Presentation, Injury Pattern, and Associated Injuries for Multiple Ligament Knee Injuries (MLKIs): A Multicenter Study From the Surgical Timing and Rehabilitation Trial for MLKIs Network
James Irrgang, PhD, Andrew Lynch, PhD, Travis Burns, MD, Christopher Harner, MD, Bruce Levy, MD, Brett Owens, MD, Robert Schenck, MD, Volker Musahl, Alicia Oostdyk, MPH, Adam Popchak, DPT, Jeremy Burnham, MD, Charity Moore, PhD, Alan Getgood, MD, Jonathan Hodax, MD, Jonathan Cooper, DO, Anil Ranawat, MD, Robert Marx, MD, MSc, FRCS, Catherine Coady, FRCS (Ortho), Ivan Wong, MD, Jeffrey Macalena, MD, Bradley Nelson, MD, Robert Arciero, MD, Cory Edgar, MD, Mark Cote, PT, Darren Johnson, MD, Cale Jacobs, PhD, Dustin Richter, MD, Gehron Treme, MD, Andrew Veitch, MD, Daniel Wascher, MD, Brandee Black, MD, Lane Bailey, PhD, Mark Miller, MD, Joe Hart, PhD

Narcotic Prescribing Education Program and Standardized Service Guidelines Change Prescribing Practices After Arthroscopic Knee Surgery
Jeffrey Stepman, MD, Michael Fu, MD, Francis Lovecchio, MD, Ajay Premkumar, MD, Peter Grimaldi, PA-C, Peter Derman, MD, Samuel Taylor, MD, Anil Ranawat, MD

Normative Athletic Activity Level Data in Children and Adolescents: A Cross-Sectional Study of 2,002 American Youth
Peter Fabricant, MD, MPH, Joash Suryavanshi, BA, Jacob Calcei, MD, Robert Marx, MD, MSc, FRCS, Roger Widmann, MD, Daniel Green, MD, MS, FAAP, FACS

Operative Versus Non-Operative Treatment of Acute Displaced Distal Clavicle Fractures: A Multicentre Randomized Controlled Trial
Moderators: Frank Cordasco, MD, MS, Thomas Throckmorton, MD
Jeremy Hall, MD, Niloofar Dehghan, FRCS, Emil Schimitsch, MD, Aaron Nauth, MD, Robert McCormack, MD, Pierre Guy, MD, Robert Korley, MD, Steven Papp, MD, Ross Leighton, MD, Edward Harvey, MD, Michael McKee, MD

Opioid Use Before Rotator Cuff Repair Is Associated with Higher Rates of Chronic Opioid Use
Moderators: Charles Getz, MD, David Dines, MD
William Schairer, MD, Benedict Nwachukwu, MD, Lawrence Gulotta, MD, Russell Warren, MD, David Dines, MD, Joshua Dines, MD

Return to Sport and Reoperation Rates in Patients Under the Age of 20 Following Primary Anterior Cruciate Ligament Reconstruction: Risk Profile Comparing Three Patient Groups Predicated Upon Skeletal Age
Sheena Black, MD, Meghan Price, BS, Daniel Green, MD, MS, FAAP, FACS, Frank Cordasco, MD, MS

Patient Perceptions of Surgeon Reimbursement for Rotator Cuff Repair
Moderators: Charles Getz, MD, David Dines, MD
Brendan Southam, MD, Zachary Crawford, Brian Grawe, MD
Reverse Shoulder Arthroplasty on Biconcave Glenoid Reduces the Risks of Joint Instability and Glenoid Loosening Compare to Total Shoulder Arthroplasty
Xiang Chen, MSc, Jonathan Glenday, BS, Timothy Wright, PhD, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD, Andreas Kontaxis, MSc, PhD

Similar Mid-Term Outcomes After Osteochondral Allograft Transplantation in Anterior Cruciate Ligament-Intact and -Reconstructed Knees: A Comparative Matched-Group Analysis
Dean Wang, MD, Claire Eliasberg, MD, Tim Wang, MD, Ryan Fader, MD, Francesca Coxe, BS, Mollyann Pais, BS, Riley Williams III, MD

Surgical Anatomy of the Radial Nerve in the Deltopectoral Approach for Revision Shoulder Arthroplasty and Periprosthetic Fracture Fixation: A Cadaveric Study
Michael Fu, MD, Michael Hendel, MD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

The Bicipital Tunnel Is Biologically Active: A Molecular Characterization of Inflammation, Degradation, and Nociception
Abigail Campbell, MD, Samuel Taylor, MD, Evan O’Dea, BA, Mary Shorey, BA, Russell Warren, MD, Stephen O’Brien, MD, MBA

The Orthopaedic Surgery Residency Application Process: An Analysis of the Applicant Experience
Prem Ramkumar, MD, Sergio Navarro, Morad Chughtai, MD, Heather Haeberle, BS, Samuel Taylor, MD, Michael Mont, MD

POSTERS

Acetabular Version and Acetabular Coverage Measurements Have Clinically Relevant Associations with Pelvic Incidence and Pelvic Tilt in Patients Treated for Femoroacetabular Impingement
Graeme Whyte, FRCSC, Aaron Buckland, FRACS, Douglas Mintz, MD, Ernest Sink, MD, Struan Coleman, MD, PhD, Robert Buly, MD

Anatomic Features of the Femoral Condyle Correspond to Intersubject Variations in Medial Collateral Ligament Tension in Total Knee Arthroplasty
Mohammad Kia, Carl Imhauser, PhD, Timothy Wright, PhD, Michael Cross, MD, David Mayman, MD, Andrew Pearle, MD, Peter Sculco, MD, Geoffrey Westrich, MD

Biomechanical Comparison of Lower Trapezius Versus Latissimus Dorsi Tendon Transfers for Rotator Cuff Deficient Shoulders
Akhil Reddy, BS, Lawrence Gulotta, MD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Alessandro Castagna, MD, Andreas Kontaxis, MSc, PhD

Longer Preoperative Opioid Use Results in Increased Rates of Chronic Opioid Use After Total Shoulder Arthroplasty
William Schairer, MD, Benedict Nwachukwu, MD, Michael Fu, MD, Lawrence Gulotta, MD, Samuel Taylor, MD, David Dines, MD, Joshua Dines, MD

Mid-Term Survivorship and Patient Satisfaction of Robotic-Assisted Unicompartmental Knee Arthroplasty: A Multicenter Study
Laura Kleebald, MD, Thomas Coon, MD, Todd Borus, MD, Joseph Nguyen, MPH, Andrew Pearle, MD

Superior Capsule Reconstruction for Reinforcement Before Arthroscopic Rotator Cuff Repair Improves Cuff Integrity
Moderators: Frank Cordasco, MD, MS, Thomas Throckmorton, MD Teruhisa Mihata, MD, Thay Lee, PhD, Akihiko Hasegawa, MD, Kunimoto Fukunishi, MD, Takeshi Kawakami, Yukitaka Fujisawa, MD, Yasuo Itami, MD, Mutsumi Ohue, MD, Munekazu Doi, Masashi Neo, MD

The Effect of Critical Shoulder Angle, Acromial Humeral Distance, Acromial Index, Center of Rotation, and Deltoid Lever Arm on Outcomes and Range of Motion in Patients Undergoing Reverse Total Shoulder Arthroplasty
Moderators: Frank Cordasco, MD, MS, Thomas Throckmorton, MD Troy Roberson, MD, Ellen Shanley, PhD, Jeffrey Abildgaard, MD, Charles Grande, Kyle Adams, BS, James Griscom, III, BA, Quinn Hunt, Quinn Nix, BS, Michael Kissenberg, MD, Stefan Tolan, MD, Richard Hawkins, MD, John Tokish, MD

Twenty-Year Results of Isolated Supraspinatus Repair
Moderators: Frank Cordasco, MD, MS, Thomas Throckmorton, MD Philippe Collin, Gilles Walch, MD, Jean Francois Kempf, MD, Herve Thomazeau, MD, Christian Gerber, MD

Validation of Telephone Administration of Patellofemoral Patient Reported Outcome Measures
Katherine Connors, BS, Joseph Liu, MD, Irene Kalbian, BA, Jeffrey Stepan, MD, Joseph Nguyen, MPH, Beth Shubin Stein, MD, Sabrina Strickland, MD

SCIENTIFIC EXHIBITS

Glenoid Bone Loss Complicating Total Shoulder Arthroplasty: A Treatment Algorithm
Joshua Dines, MD, Asha Bedi, MD, David Dines, MD, Lawrence Gulotta, MD, Christopher Camp, MD, Patrick Denard, MD, Ryan Rauck, MD, Joseph Ruzbarsky, MD, Jacob Calcei, MD

Latarjet Versus Soft Tissue Stabilization: Who Is the Ideal Candidate for Each?
Brandon Erickson, MD, Bernard Bach, Jr., MD, Lawrence Gulotta, MD, Joshua Dines, MD, Samuel Taylor, MD, Stephen O’Brien, MD, MBA, Christopher Ahmad, MD, Nikhil Verma, MD, Anthony Romeo, MD
Orthobiologics for Upper Extremity Disorders: What Is the Evidence?
Daniel Curtis, MD, Jonathan Edgington, MD, Charles Qin, MD, Jason Koh, MD, Eugene Ek, MD, Sherwin Ho, MD, Scott Rodeo, MD, Lewis Shi, MD

Eoghan Hurley, Charles Hannon, MD, Christopher Murawski, Niall Smyth, MD, Michael Hendel, MD, John Kennedy, MD, Brian Cole, MD, Scott Rodeo, MD, Cathal Moran, MD

The Team Physician: Pre-Participation Physicals to Sideline Management and Everything in Between
Jacob Calcei, MD, Joseph Ruzbarsky, MD, Evan O’Donnell, MD, Keith Corpus, MD, Ryan Rauck MD, Russell Warren, MD, Scott Rodeo, MD, James Kinderknecht, MD, Samuel Taylor, MD

SYMPOSIA

Biologics—PRP and Stem Cells
Scott Rodeo, MD

International Perspectives on Shoulder Arthroplasty: Around the World in 120 Minutes
Lawrence Gulotta, MD

Osteotomies (HTO/DFO): When Is It Necessary?
Robert Marx, MD, MSc, FRCSC

SPECIALTY DAY

Biomechanics of Lower Trapezius and Latissimus Dorsi Transfers in Rotator Cuff Deficient Shoulders
Akhil Reddy, BS, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

Case Panel: Instability and Biceps Case Panel—What Would You Do?
Robert Burks, MD, Neal ElAttrache, MD, Larry Field MD, Stephen O’Brien, MD, MBA, Matthew Provencher, Anthony Romeo MD, John Tokish

How-To Videos II: Shoulder—Rotator Cuff
Moderators: Lawrence Gulotta, MD

Knee Ligament
Moderators: Jo A. Hannafin, MD, PhD

Osseous Vascularity of the Medial Elbow Following Ulnar Collateral Ligament Reconstruction: A Comparison of the Docking and Modified Jobe Techniques
Christopher Camp, MD, Craig Klinger, BA, Lionel Lazaro, MD, Jordan Villa, MD, Jelle Van Der List, MD, David Altschek, MD, Dean Lorich, MD, Joshua Dines, MD

The Biceps as a Pain Generator: How Do We Make the Diagnosis?
Stephen O’Brien, MD, MBA

TECHNICAL SKILLS

Issues of Alignment and Tibial Slope: When to Address and How?
Anil Ranawat, MD

Massive, Irreparable Rotator Cuff Tears: What Are Our Treatment Options?
Moderator: Joshua Dines, MD
ORS Annual Meeting

MEET THE PROFESSOR

Meet the Professor
Scott Rodeo, MD

MODERATORS

Cartilage and Synovium: Inflammation
Mary Goldring, PhD

Hip and Knee Arthroplasty
Timothy Wright, PhD

In Vivo and In Vitro Techniques to Study Skeletal Muscle Growth and Regeneration
Christopher Mendias, PhD

Muscle
Christopher Mendias, PhD

ORS AWARDS SESSION

ORS Welcome Session and Presidential Address
Mary Goldring, PhD (Recognition of Inaugural Class of ORS Fellows)

NIRA—Spine, Tendon and Ligament: The Effect Of Different Immobilization Periods On Mmps (2, 3, 9, And 13) Activity In Acr1 Murine Model
Yusuke Nakagawa, MD, PhD, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Samuel Green, Zoe Album, Liang Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

ORS/OREF GRANT WRITING WORKSHOP

What Does Your SC/Resume Say About You?
Mary Goldring, Ph, Co-Organizer

PAPER PRESENTATIONS

Disruption of the Microbiome Increases Risk of Periprosthetic Joint Infection in Mice
Christopher Hernandez, PhD, Xu Yang, MD, Gang Ji, MD, Joseph Koressel, MS, Matthew Shirley, BS, Michael Horsfield, BS, Arvinth Senthuraman, Susan Chyou, BS, Ilana Brito, PhD, Theresa Lu, MD, PhD, Mathias Bostrom, MD

Heat-Labile Antibiotics Maintain Antimicrobial Activity in Revision Arthroplasty Cement Spacers
Alberto Carli, MD, FRCSC, Arvinth Senthuraman, Gang Ji, MD, Samrath Bhimani, MD, Xu Yang, MD, F. Patrick Ross, PhD, Mathias Bostrom, MD

MR-based Analysis of the Peri-prosthetic Cortex in Failed Total Hip Arthroplasty: A Pilot Study
Arvinth Senthuraman, Matthew Koff, PhD, Alissa Burge, MD, Bin Lin, MS, Hollis Potter, MD, Mathias Bostrom, MD

Noninvasive Diagnosis of Peri-prosthetic Joint Infections in Mice
Arvinth Senthuraman, Xu Yang, MD, Joseph Koressel, MS, Gang Ji, MD, Michael Horsfield, BS, Christopher Hernandez PhD, Mathias Bostrom, MD

Zero Echo Time MRI of Bone: Assessing Femoroacetabular Impingement
Ryan Breighner, Eric Bogner, MD, Bryan Kelly, MD, Matthew Koff, PhD, Hollis Potter, MD

POD IUM

A Comparison of Tibia Lengthening Techniques: Internal Lengthening, Lengthening and Then Nailing and Classic Ilizarov
Tom Falls, MD, Austin Fragomen, MD, S. Robert Rozbruch, MD

Biomechanical Evaluation of Acromial Strain After Reverse Shoulder Arthroplasty
Xiang Chen, MSc, Joseph Gentile, MD, Russell Warren, MD, Andreas Kontaxis, MSc, PhD, Lawrence Gulotta, MD

Biomechanics of Lower Trapezius and Latissimus Dorsi Transfers in Rotator Cuff Deficient Shoulders
Akhil Reddy, BSc, Xiang Chen, MSc, David Dines, MD, Russell Warren, MD, Alessandro Castagna, MD, Lawrence Gulotta, MD, Andreas Kontaxis, MSc, PhD

Dynamic Loads Distributed Through the Medial Meniscus Are Variable across Knees during Gait
Caroline Brial, MEng, Tony Chen, PhD, Amanda Wach, MS, Russell Warren, MD, Peter Torzilli, PhD, Suzanne Maher, PhD

Effect of Different Compressive Stress Patterns During Articulation on Cartilage Stiffness: A Microindentation Study
Catherine Yuh, Tony Chen, PhD, Mehdi Khoshgoftar, PhD, Suzanne Maher, PhD, Markus Wimmer

Knee Kinematics and Contact Stres sors During Simulated Gait
Amanda Wach, MS, Russell Warren, MD, Peter Torzilli, PhD, Suzanne Maher, PhD
Lateralization and Attachment Site Affect Subscapularis Biomechanics After Reverse Shoulder Arthroplasty
Eric Windsor, BSc, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD, Samuel Taylor, MD

Single Cell RNA-seq Reveals mRNA Expression Changes in Specific Cell Types Following Sclerostin Inhibition
Ugur Ayturk, PhD, Joseph Scollan, BS, Christina Jacobsen, MD, PhD, Matthew Warman, MD

Tibial Bony Morphology and Tibiofemoral Laxity Predict Knee Mechanics During Compression
Robert Kent, Dean Wang, Mark Amirtharaj, Brendan Hardy, Thomas Wickiewicz, MD, Andrew Pearle, MD, Carl Imhauser, PhD

POSTERS

A RCT Using a Novel Stem Cell Approach for Managing Subchondral Bone Edema in Knee OA
Vijay Vad, MD, Raghav Barve, MBBS, MCh, Kaitlin Carroll, Chris Topar, Dmed

A Prospective, Longitudinal Assessment of Adverse Local Tissue Reactions in Resurfacing Hip Arthroplasty Versus Primary Total Hip Arthroplasty
Jacqui Zhu, Matthew Koff, PhD, Bin Lin, Kara Fields, Danyal Nawabi, MD, Edwin Su, MD, Douglas Padgett, MD, Hollis Potter, MD

Anatomic Features of the Femoral Condyle Correspond to Intersubject Variations in MCL Tension in Total Knee Arthroplasty
Mohammad Kia, Peter Sculco, MD, Timothy Wright, PhD, Andrew Pearle, MD, Michael Cross, MD, David Mayman, MD, Geoffrey Westrich, MD, Carl Imhauser, PhD

Antioxidant Stabilized XLPE in TKA: A Retrieval Analysis
Lydia Weitzler, MS, Danielle Ponzio, MD, Christina Esposito, PhD, Timothy Wright, PhD, Douglas Padgett, MD

Biomechanical Evaluation of Acromial Strain After Reverse Shoulder Arthroplasty
Xiang Chen, MSc, Joseph Gentile, MD, Russell Warren, MD, Andreas Kontaxis, MSc, PhD, Lawrence Gulotta, MD

Biomechanical Evaluation of Lateral Extra-articular Surgical Procedures of the Knee: A Computational Study
Hamidreza Jahandar, Mark Amirtharaj, Tim Wang, Thomas Wickiewicz, MD, Danyal Nawabi, MD, Andrew Pearle, MD, Carl Imhauser, PhD

Biomechanics of Lower Trapezius and Latissimus Dorsi Transfers in Rotator Cuff Deficient Shoulders
Akhil Reddy, BS, Andreas Kontaxis, MSc, PhD, Xiang Chen, MSc, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

Bnip3 Gene Associated With Mitochondria Dysfunction Is Up-regulated In Tenocytes From Human Tendinopathy Patients
Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Ying Zhang, PhD, Elizabeth Selvaggio, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Miguel Otero, PhD, Michelle Delco, DVM, PhD, Lisa Fortier, DVM, PhD, Scott Rodeo, MD

Bone Bruise and Knee Instability in Anterior Cruciate Ligament Ruptures: Association Between Magnetic Resonance Imaging Signs and Joint Laxity
Ricardo Bastos, MD, PhD, Scott Rodeo, MD

Combined Local and Systemic Antibiotics Fail to Eradicate Periprosthetic Joint Infection in a Murine Model
Matthew Shirley, BS, Gang Ji, MD, Joseph Koressel, MS, Alberto Carli, MD, F. Patrick Ross, PhD, Marjolein Van Der Meulen, PhD, Christopher Hernandez, PhD, Xu Yang, MD, Mathias Bostrom, MD

Comparison Of Bone Tunnel And Cortical Surface Tendon-To-Bone Healing In a Rabbit Biceps Tenodesis Model
Dean Wang, MD, Hongbo Tan, PhD, Amir Lebaschi, MD, Ian Hutchinson, MD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD, Russell Warren, MD

Effect of Bioreactor Boundary Conditions on Cartilage Mechanics
Mehdi Khoshgoftar, PhD, Tony Chen, PhD, Peter Torzilli, PhD, Suzanne Maher, PhD

Effect of Head Material on Simulated Head-Trunnion Corrosion Is Inconsistent Across Commercial Stem Designs
Amanda Wach, MS, Rowan, MD, Douglas Padgett, MD, Timothy Wright, PhD

Evaluation of Bone Formation with Micro-Computed Tomography After Biceps Tenodesis in a Rabbit Model: Comparison of Bone Tunnel and Cortical Surface Fixation Techniques
Dean Wang, MD, Amir Lebaschi, MD, Hongbo Tan, PhD, Ian Hutchinson, MD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD, Russell Warren, MD

Finite Element Analysis Of Tibial Bone-implant Load Transfer And Bone Strains With a Modern Fixed-bearing Total Ankle Replacement
Susan Rodriguez, Xiang Chen, MSc, Guilherme Honda Saito, Constantine Demetracopoulos, MD, Scott Ellis, MD, Jonathan Deland, MD, Daniel Sturnick

Gene Expression Profiling by Nanostring in a Murine Rotator Cuff Repair Model
Elizabeth Selvaggio, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Amir Lebaschi, MD, Zoë Album, Susumu Wada, MD, PhD, Miguel Otero, PhD, Xiang-Hua Deng, MD, Scott Rodeo, MD
Histomorphometric and Immunohistochemical Evaluation of Collagenase Injection and Treadmill Running Murine Models of Patellar Tendinopathy
Dean Wang, MD, Guang-Cong Ting, MD, Daniel Nemirov, Zoe Album, Camila Carballo, PT, PhD, Yusuke Naagawa, MD, PhD, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

Human Amniotic Membrane Improves Healing in a Chronic, Massive Rotator Cuff Repair Model
David Kovacevic, MD, Robert Suriani, MD, Maarouf Saad, Shivam Patel, Steven Tommasini, PhD, Christopher Mendias, PhD, Chad Carroll, PhD, Theodore Blaine, MD

Injury Modulates Tenocyte Integrin Expression in Human Tendon
Moni Chatterjee, BS, Nelly Andawaris-Puri, PhD, Scott Rodeo, MD

Lateralization and Attachment Site Affect Subscapularis Biomechanics After Reverse Shoulder Arthroplasty
Eric Windsor, BSc, Andreas Kontaxis, MSc, PhD, Xiang Chen, MS, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD, Samuel Taylor, MD

Mechanical Loading and Tissue Stiffness Regulating YAP Expression in Tenocytes
Brennan Rourke, Scott Rodeo, MD

Mechanical Loading Combined with Bone-Marrow Mesenchymal Stromal Cells Induces Ectopic Bone Formation in a Medial Meniscus Destabilization Model: Insights into Osteophyte Formation
Camila Carballo, PT, PhD, Yusuke Nakagawa, MD, PhD, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Jordan Green, Dean Wang, MD, Arielle Hall, Tyler Uppstrom, Zoe Album, Miguel Otero, PhD, Jose Brito, PhD, Scott Rodeo, MD

Molecular Mechanisms of Platelet-Rich Plasma Elucidating Clinical-Grade PRP’s Intrinsic Variation
Jeremy Mao, DDS, PhD, Scott Rodeo, MD

MR-Based Analysis of the Peri-prosthetic Cortex in Failed Total Hip Arthroplasty: A Pilot Study
Arivinth Sethuraman, Matthew Koff, PhD, Alissa Burge, Bin Lin, Hollis Potter, MD, Mathias Bostrom, MD

Muscle-Derived Activated Endothelial Cells as a New Cell Source to Enhance Tendon-To-Bone Healing: In Vivo Biomechanical, Histological and CT Evaluations in a Murine Rotator Cuff Repair Model
Susumu Wada, MD, PhD, Amir Lebaschi, MD, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Dean Wang, MD, Zoe Album, Brett Croen, Samuel Green, Daniel Nemirov, Elizabeth Selvaggio, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

On the Biomechanical Benefits of Augmenting Percutaneous Pedicle Screw Fixation with Kyphoplasty in the Treatment of Burst Fractures: A Finite Element Analysis
Shady Elmasry, Shihab Asfour, Francesco Travascio

Patellar Tendon T2* MRI Demonstrates Longitudinal Changes of Tendon Degeneration Over a Season in College Basketball Players
Erin Argentieri, Parina Shah, Hollis Potter, MD, Ogonna Nwawka, MD, Matthew Koff, PhD

Patellar Tendon T2* MRI Demonstrates Longitudinal Changes of Tendon Degeneration Over a Season in Validation of Meniscus and Articular Cartilage Histological Score for Meniscus Implantation in An Ovine Model
Brett Croen, Yusuke Nakagawa, Lisa Fortier, Jeremy Mao, DDS, PhD, Chang Lee, Matthew Koff, PhD, Margaret Goodale, Samuel Green, Daniel Nemirov, Susumu Wada, MD, PhD, Liang Ying, Hollis Potter, MD, Scott Rodeo, MD

Persistent Accumulation of M2 Macrophages Around Muscle Fibers in Patients with Chronic Rotator Cuff Tears
Nathaniel Disser, Brennan Rourke, Daniel Jenkins, Scott Rodeo, MD, Asheesh Bedi, MD, Abigail Mackey, Christopher Mendias, PhD, ATC

Post-operative Tendon Loading with Treadmill Running Delays Tendon to Bone Healing: Evaluation of the Indian-hedgehog Pathway in a Murine Rotator Cuff Repair Model
Susumu Wada, MD, PhD, Amir Lebaschi, MD, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Zoe Album, Tyler Uppstrom, Arielle Hall, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

Primary Stability and Load Transfer of Cementless Knee Implants During Stair Climbing
Fernando Quevedo-Gonzalez, PhD, Darrick Lo, MEng, Joseph Lipman, MS, Ivan DeMartino, MD, Peter Sculco, MD, Thomas Sculco, MD, Fabio Catani, MD, Timothy Wright, PhD

Simulating the Combined Effect of Muscle Fatigue and Muscle Weakness in Reverse Shoulder Arthroplasty
Jonathan Glenday, MSc, Bhushan Borotikar, PhD, Andreas Kontaxis, MSc, PhD, Stephen Roche, MD, Valérie Burdin-Fracasso, PhD, Tinashe Mutsvangwa, PhD, Sudesh Sivarasu, PhD

Satellite Cells From The Rotator Cuff Have A Greater Intrinsic Adipogenic Differentiation Capacity Than Other Muscles
Manuel Schubert, MD, Andrew Noah, Asheesh Bedi, MD, Christopher Mendias, PhD, Jonathan Gumucio

Surface Damage and Oxidation Are Reduced in XLPE Tibial Inserts at Midterm Follow Up
Lidia Weitzler, MS, Alexandra Stavrikas, MD, Douglas Padgett, MD, Timothy Wright, PhD
The Effect of ACL Injury and Reconstruction on Knee Joint Stress
Kevin Maraillac, L3, Alex Riveaux, L3, Oliver Morgan, BSc, Howard Hillstrom, PhD, Rajshree Hillstrom, PhD, MBA

The Effect Of ACL Reconstruction Surgery On Mmp Activity In The Non-operated Side In a Murine Model
Samuel Green, Yusuke Nakagawa, MD, PhD, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Brett Croen, Zoe Album, Liang Ying, Xiang-Hua Deng, Scott Rodeo, MD

The Effect of Constraint on Post Damage in TKA: PS Versus PSC Inserts
Lydia Weitzler, MS, Joseph Konopka, MD, Geoffrey Westrich, MD, Timothy Wright, PhD

The Effect of Femoral Rotation on Patellofemoral Contact Mechanics: A Dynamic Cadaveric Model
Amanda Wach, MSc, Andrea Spiker, MD, Bryan Kelly, MD, Sabrina Strickland, MD

The Role of Bone-marrow Mesenchymal Stromal Cells, Juvenile and Adult Articular Chondrocytes, and Endothelial Cell Interactions Through Direct Co-culture
Camila Carballo, PT, PhD, Yusuke Nakagawa, MD, PhD, Samantha Lessard, Miguel Otero, PhD, Jose Britto, PhD, Scott Rodeo, MD

The Effect of Wnt and Indian Hedgehog Signaling in Healing at the Graft-Bone Interface in Anterior Cruciate Ligament Reconstruction:
Immunohistochemical Evaluation in a Murine Model
Amir Lebaschi, MD, Christopher Camp, MD, Dean Wang, MD, Yusuke Nakagawa, MD, PhD, Susumu Wada, MD, PhD, Camila Carballo, PT, PhD, Zoe Album, Xiang-Hua Deng, MD, Scott Rodeo, MD

Unicompartmental Knee System On Tibiofemoral Joint Stress
Oliver Morgan, BSc, Rajshree Hillstrom, PhD, MBA, Anil Ranawat, MD, Austin Fragomen, MD, S. Robert Rozbruch, MD, Howard Hillstrom, PhD

Validation of Meniscus and Articular Cartilage Histological Score for Meniscus Implantation in An Ovine Model
Brett Croen, Yusuke Nakagawa, MD, PhD, Lisa Fortier, DVM, PhD, Jeremy Mao, DDS, PhD, Chang Lee, PhD, Matthew Koff, PhD, Margaret Goodale, Samuel Green, Daniel Nemirov, Susumu Wada, MD, PhD, Liang Ying, Hollis Potter, MD, Scott Rodeo, MD

Variability in 12/14 Femoral Stem Taper Design for THA: A Retrieval Analysis
Lydia Weitzler, MS, Zachary Salas, BS, MA, Christina Esposito, PhD, Timothy Wright, PhD, Douglas Padgett, MD

Wnt/β-Catenin Signaling Play a Role in Rotator Cuff Repair and Are Affected by Mechanical Loading
Yusuke Nakagawa, MD, PhD, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Camila Carballo, PT, PhD, Zoe Album, Lilly Ying, Xiang-Hua Deng, MD, Scott Rodeo, MD

SCIENTIFIC WORKSHOP

Evaluation of Implant Failure:
The Role of MRI and Retrieval Analysis
Douglas Padgett, MD, Timothy Wright, PhD

Clinical MRI Applications
Hollis Potter, MD

The Scientific Legacy of Adele Boskey: From Biomineralization Mechanisms to Bone Quality
Insights into a Rare Bone Disease: Osteogenesis Imperfecta, From Bedside and Back Again
Cathleen Raggio, MD

The Clinical Evaluation and Workup of the Failed Implant
Mathias Bostrom, MD

The Role of Implant Retrieval in Evaluating Failed Implants
Timothy Wright, PhD

The Use of MR in Evaluating the Failed Implant
Hollis Potter, MD

SPECIALTY DAY

Limb Lengthening and Reconstruction Society
Ankle Deformity and Osteoarthritis
S. Robert Rozbruch, MD

Best Papers of ILLRS 2017 Meeting
Austin Fragomen, MD

Feasibility of Correcting the Mechanical Axis in Large Varus Deformities with Medial Unicompartmental Knee Arthroplasty (Best Papers of LLRS Annual Meeting 2017)
S. Robert Rozbruch, MD

Foot and Ankle Deformity
Austin Fragomen, MD

Post Traumatic Arthritis of Ankle
Austin Fragomen, MD

Meniscus Section Meeting
How to Detect Change?
Hollis Potter, MD

SYMPOSIA

Knowledge Gaps in the Field of Meniscus Research
Suzanne Maher, PhD (Organizer)

ORS Business Plan Competition
Suzanne Maher, PhD (Mentor)