



Background

- Prosthetic shoulder (PSA) provides relief and functional glenohumeral arthroplasty
- It is being performed frequently, because of patient expectations and clinical outcomes
- Indications for PSA have expanded to new patient groups including ever younger patients with post-traumatic chondrolysis & capsulorraphy



2016 ANNUAL REPORT

*Internationally distinguished for patient care with
compassion and advanced clinical research*

Cincinnati SportsMedicine Research & Education Foundation
Cincinnati SportsMedicine & Orthopaedic Center - Mercy Health
Noyes Knee Institute

Welcome to our Foundation



The Cincinnati SportsMedicine Research & Education Foundation is a unique foundation in its commitment to excellence in all aspects of patient care, clinically applied research, and the education and teaching of surgeons, physical therapists and allied professionals throughout the world. The Noyes Knee Institute was founded to advance these goals for all knee disorders. The physicians associated with the Foundation strive through research and clinical practice to develop state-of-the-art surgical techniques and treatment options that represent the most advanced procedures available worldwide. Our research personnel and scientists have conducted over 100 clinical research studies involving thousands of patients, published over 350 articles in peer-reviewed medical journals and orthopaedic textbooks, and trained over 145 Sportsmedicine and Arthroscopic Surgeons in our Fellowship program.

A Foundation program that has received international attention is a scientifically proven nonprofit neuromuscular training program, Sportsmetrics, designed to prevent ACL injuries in female athletes that occur 4-10 times that of the male athlete. Our Sportsmetrics staff teaches and certifies allied professionals on training athletes and implementing Sportsmetrics, which is in hundreds of Centers and is the largest program of this type in the world. Our annual course, "The Advances on the Knee, Shoulder and Sports Medicine Conference", has trained thousands of physicians, therapists and athletic trainers world-wide in its 32nd year.

We appreciate the many expert guest faculty that support the excellence of this program. The Foundation was founded in 1985 by Frank R. Noyes, M.D., President and Medical Director of the Cincinnati SportsMedicine and Orthopaedic Center.

The Foundation was established with the goal of bringing together surgeons, therapists, trainers, researchers and bioengineering professionals in a team approach to develop successful and innovative patient treatment programs to improve the lives of patients. The clinical and bioengineering research studies have received nearly every national and international award possible. These include the highest award from the American Academy of Orthopaedic Surgeons (three Kappa Delta Awards), the Orthopaedic Research and Education Foundation's Clinical Excellence Award, and the American Orthopaedic Society for Sports Medicine Clinical and Research Awards. The Foundation studies were recently honored and ranked in bibliographic publications in JBJS and Arthroscopy journals as the "most-cited studies" in the world.

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Our Mission

To improve the lives of patients everywhere by offering advanced and state-of-the-art treatments for Orthopaedic and Sports Medicine disorders based on excellence and success in documented clinical outcome studies and application of basic and clinical research.

2016

Accomplishments

Research and education advances are represented by the collaboration of physicians, scientists and research staff at Mercy Health-Cincinnati SportsMedicine and Orthopaedic Center, Cincinnati SportsMedicine Research and Education Foundation, Noyes Knee Institute, and the University of Cincinnati Department of Biomedical Engineering.

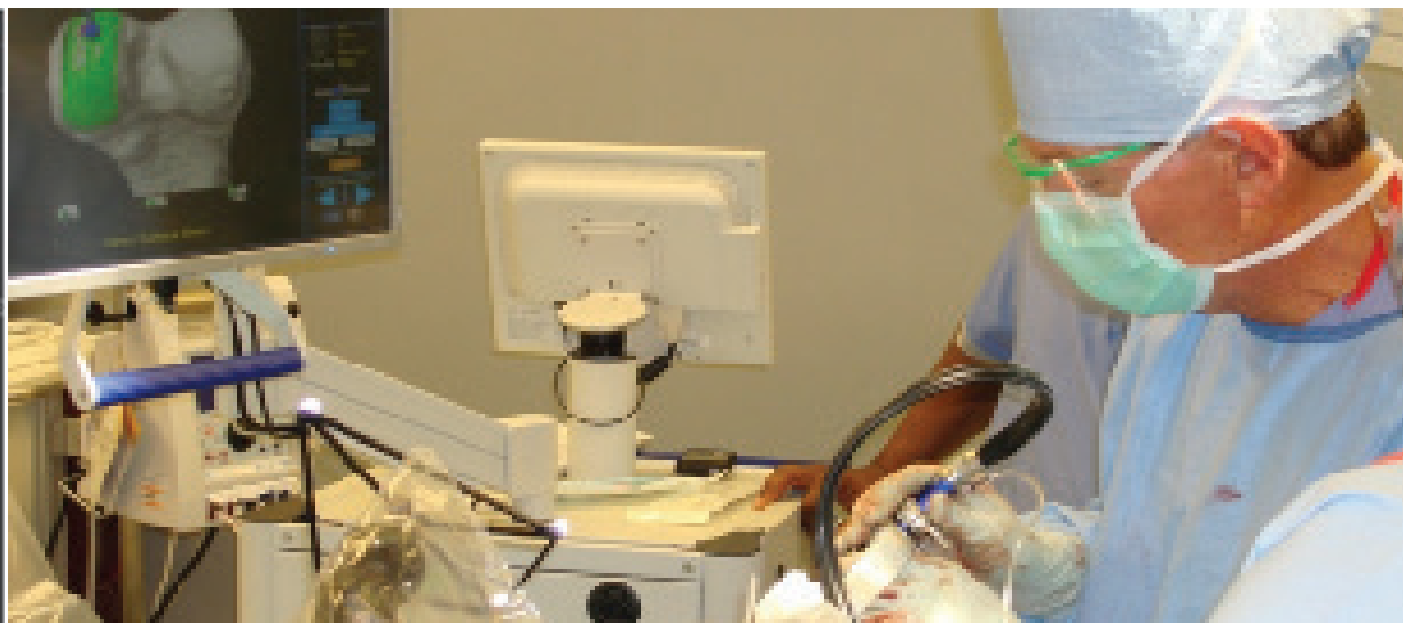
Publications

- 2016 represented one of the most productive years for study completion and manuscript publications. Twenty-one studies were completed, resulting in original manuscripts published in peer-reviewed orthopaedic journals including Journal of Bone and Joint Surgery, Sports Health, Arthroscopy, American Journal of Sports Medicine and Arthroscopy Techniques
- Release of Noyes' Knee Disorders: Surgery, Rehabilitation, Clinical Outcomes, 2nd Edition, including 32 chapters authored by Dr. Noyes and published by Elsevier
- Dr. Noyes is currently editing the 2nd edition of "ACL Injuries in the Female Athlete. Causes, Impacts and Conditioning Programs".
- Release of the 2nd edition of 3 e-books, 1) ACL Injury: Everything You Need to Know to Make the Right Treatment Decision, 2) ACL Injury Rehabilitation: Everything You Need to Know to



Restore Knee Function and Return to Activity, 3) Meniscus (Cartilage) Tears: Everything You Need to Know to Make the Right Treatment Decision. Dr. Noyes' e-book series includes 12 books on various knee disorders and is widely used in the United States.

- Dr. Bhatia is listed as co-editor of Ligamentous Injuries of the Knee. Nova Science Publishing, Hauppauge, New York.
- Dr. Hasan co-authored a chapter for the textbook "Clavicle Injuries: A Case-Based Guide to Diagnosis and Treatment". Textbook is in press.
- The Biomechanics and Robotics Division has a series of publications on Rotational Knee Stability and ACL Reconstructions



Education

- 50 invited presentations given at international (ICSES Korea), national (AAOS, AANA), regional (Ohio Shoulder and Elbow Society) and local meetings.
- 7 abstracts submitted for presentation at international and national meetings.
- 62 teaching conferences attended by fellows, physical therapists, athletic trainers, physical therapy students, and athletic training residents.
- 11 journal clubs attended by staff physicians and fellows.



Fellowship

- Nationally acclaimed sports medicine, knee, and shoulder fellowship program
- ACGME/RRC accreditation; recognized by the American Orthopaedic Society for Sports Medicine and the Arthroscopy Association of North America.
- 147 fellow graduates (1979-2016) practicing across the United States and Canada.



Sportsmetrics

- 166 athletes trained in 2016. Training was completed at Cincinnati Christian University, Cincinnati State, St. Ursula, Fairfield, McAuley, Milford, West Union, Glen Este, Batavia and Amelia high schools.
- Certification: 130 individuals certified from 62 sites.
- Courses held in Cincinnati, Dayton, and Hilton Head.
- Mini-certification course was held for 45 Mercy-Health Athletic Trainers in December. Goal is to implement training in all Mercy-Health schools.

Director Statements

Our Foundation and patient care Center experienced an exceedingly active year with major accomplishments in every division. The enthusiasm and continued excellence of our physician, rehabilitation, administrative and research staffs are a personal delight for me to see in action.



Frank R. Noyes, MD

Medical Director

The new clinical studies, surgical approaches, and research advances are presented in this report.

Select publications are described in greater detail. New research initiatives in the shoulder, knee, hip, injury prevention and performance

occurred in 2016.

I hope you will enjoy this

summary of the accomplishments of the Foundation.

The year 2016 represented the third year of integration of Cincinnati SportsMedicine & Orthopaedic Center and Mercy Health, which represents one of the fifteen largest health care organizations in the United States. We are pleased that Mercy Health and Jewish Hospital and Foundation has endorsed and supported our clinical research and educational programs through a joint operating agreement. Our continued growth now numbers a total of 105 dedicated personnel in our Center and Foundation. We offer sports medicine,

and specialty clinics at six Centers throughout the Cincinnati and Northern Kentucky region. Last year alone, our physicians saw more than 27,000 new and follow-up patients, while our physical therapy and rehabilitation staff managed more than 60,000 patient visits. Our patients are offered the advantage to enroll in advanced treatment programs in all disciplines. We continue to operate and function at two research Centers within the Foundation and are in the process of increasing our collaboration with a new to be elected Director at the Department of Biomedical Engineering, University of Cincinnati. This relationship has spanned an amazing 40 years of collaboration between scientists and clinicians.

We recently announced the Annual Frank R. and JoAnne Noyes Eminent Scholarship Lecture program to be held yearly at the Department of Orthopaedic Surgery, School of Medicine, University of Cincinnati. Dr. Noyes has been awarded the honor of an Emeritus Professor of Orthopaedic Surgery. We look forward to advancing this important relationship with future research and educational programs. Our sports medicine and arthroscopy fellowship continues to attract an excellent group of orthopedists. The achievements of our fellows in 2015-16 and 2016-17 are provided. Our fellows work closely with our full-time staff and have major commitments to clinical and robotic research studies. The list of publications shows their involvement in national peer reviewed publications and presentations.

Foundation Staff

Professional Staff



Edward Grood, PhD
Emeritus Professor,
University of Cincinnati
Department of
Biomedical Engineering



Sue Barber-Westin, BS
Director, Clinical
Research,
Noyes Knee Institute

2015-2016 Fellows



Leslie Schwindel, MD



Firas Kawtharani, MD



Matthew Beck, MD



Cassie Fleckenstein, MS
Manager,
Clinical Research



Jennifer Riccobene, BA
Research Coordinator



Debbie Hartwig
Administrative Assistant

2016-2017 Fellows



Brad Ashman, MD



Chris Karrasch, MD



Jeff Jenks, DO



Tommy Campbell, BA
Director of Marketing,
Noyes Knee Institute &
Sportsmetrics



Stephanie Smith, MS
Manager,
Sportsmetrics Program



Teresa Wood
Fellowship Coordinator/
Administrative Assistant



Mat Phillips, MD

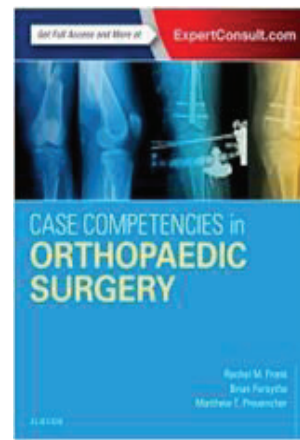
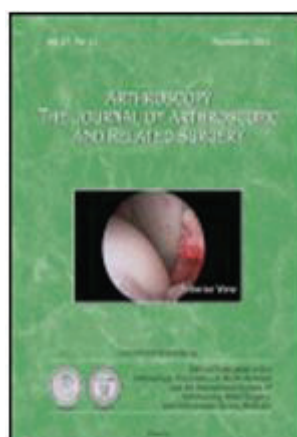


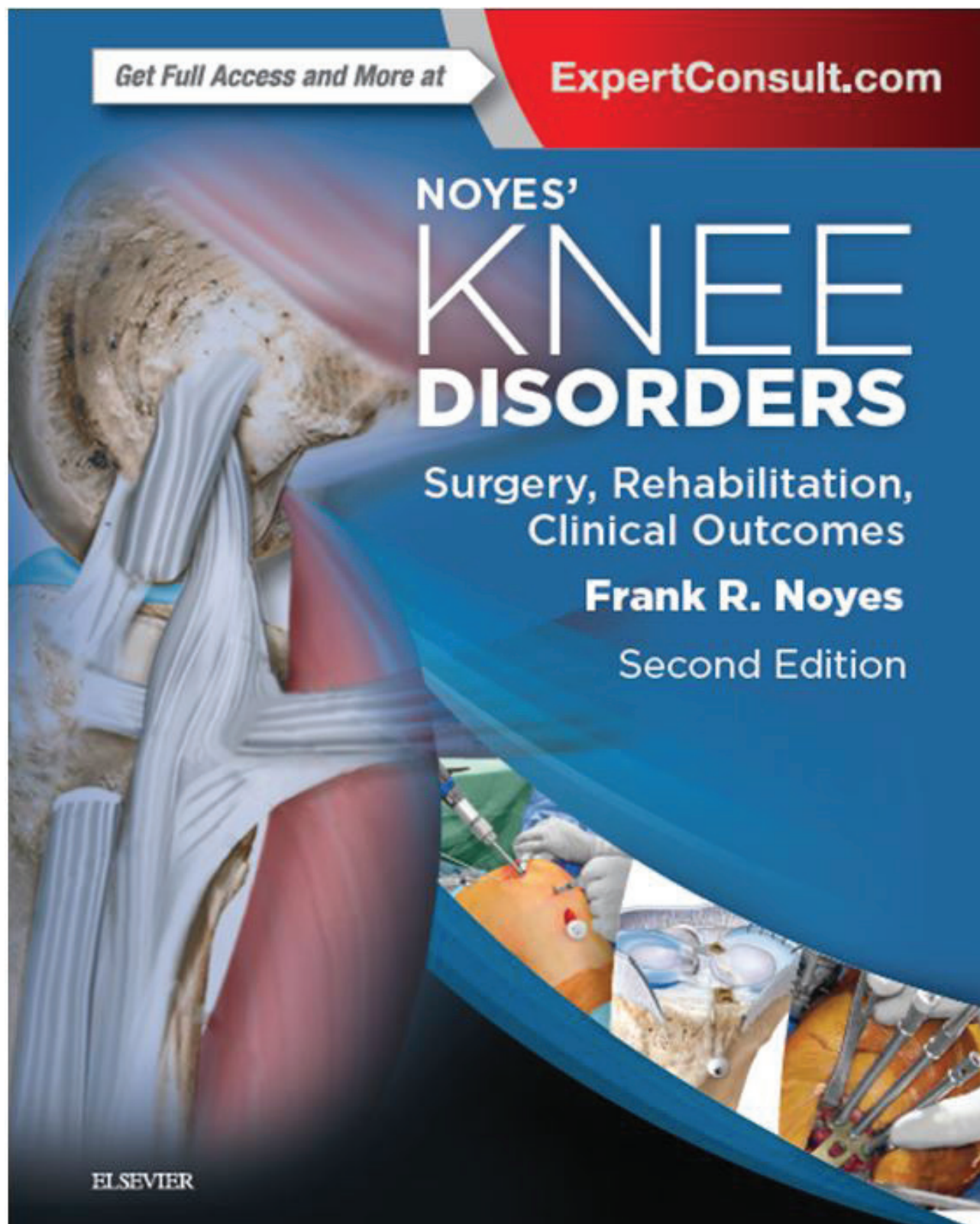
Lauren Huser, MEng,
Research Associate



Corinne Luther, BS
Research Coordinator

2016 Journal Publications and Textbook Chapters





Knee Division: Clinical Outcome Studies & Applied Clinical Research

- Knee Disorders Prospective Registry
- Tibial and Femoral Osteotomy Realignment Studies
- Cartilage and Meniscus Restoration Center
- Robotic Patellofemoral and Tibiofemoral Joint Replacement Center



This division is responsible for every phase of our patient-related studies under the direction of Dr. Frank Noyes. The Knee Registry is over 25 years old and numerous clinical studies have been published on all types of complex knee disorders. The publications have a 90% to 100% follow up that is a major credit to our research staff that follow our patients throughout the United States. Patients travel from all over the world to receive specialized care for serious knee disorders and our clinical and research team continue to provide the highest standard of care available with compassion and individualized treatment programs. The breadth of clinical outcomes studies are featured in the 2nd edition of the Noyes Knee

Disorders book just published.

Personnel: Sue Barber-Westin, Cassie Fleckenstein, Jennifer Riccobene, Cori Luther

Publications

1. Huser LE, Noyes FR, Jurgensmeier D, Levy MS. Anterolateral Ligament and Iliotibial Band Control of Rotational Stability in the Anterior Cruciate Ligament-Intact Knee: Defined by Tibiofemoral Compartment Translations and Rotations. *Arthroscopy*. 2016
2. Noyes FR. Lateral Extra-Articular Reconstructions With Anterior Cruciate Ligament Surgery: Are These Operative Procedures Supported by In Vitro Biomechanical Studies? *Arthroscopy*. 2016 Dec;32(12):2612-2615.
3. Barber-Westin SD, Noyes FR. Aerobic Physical Fitness and Recreational Sports Participation After Total Knee Arthroplasty: A Systematic Review. *Sports Health*. 2016 Nov/Dec;8(6):553-560.
4. Noyes FR, Barber-Westin SD. Long-Term Survivorship and Function of Meniscus Transplantation. *Am J Sports Med*. 2016 Sep;44(9):2330-8.
5. Noyes FR. Regarding "Experimental Execution of the Simulated Pivot-Shift Test: A Systematic Review of Techniques". *Arthroscopy*. 2016 May;32(5):729-30.
6. Bhatia S, Korth K, Van Thiel GS, Gupta D, Cole BJ, Bach BR, Verma NN. Effect of Tibial Tunnel Diameter on Anatomic Femoral Tunnel Placement in Transtibial Single Bundle ACL Reconstruction. *KSSA*. 2016 Jan;24(1):51-7.
7. Bhatia S, Civitaresse D, Turnbull TL, LaPrade CL, Nitri M, Wijdicks CA, LaPrade RF. A Novel Repair Method for Radial Tears of the Medial Meniscus: Biomechanical Comparison of Transtibial Two Tunnel and Double Horizontal Mattress Suture Techniques under Cyclic Loading. *Am J Sports Medicine*. 2016 Mar;44(3):639-45.
8. Moulton SG, Bhatia S, Civitaresse DM, Frank RM, Dean CS, LaPrade RF. Surgical Techniques and Outcomes of Repairing Meniscal Radial Tears: A Systematic Review. *Arthroscopy*. 2016 Sep;32(9):1919-25.
9. Nitri M, Chahla J, Civitaresse D, Bhatia S, Moulton SG, LaPrade CM, LaPrade RF. Medial Meniscus Radial Tear: A Transtibial 2-Tunnel Technique. *Arthrosc Tech*. 2016 Aug 15;5(4):e889-e895.
10. ACL Injury: Everything You Need to Know to Make the Right Treatment Decision Noyes FR, Barber-Westin SD (eds). Available online September 27, 2012; updated 4/21/16.
11. ACL Injury Rehabilitation: Everything You Need to Know to Restore Knee Function and Return to Activity. Noyes FR, Barber-Westin SD (eds). Available online October 15, 2012; updated 12/9/16.
12. Meniscus (Cartilage) Tears: Everything You Need to Know to Make the Right Treatment Decision Noyes FR, Barber-Westin SD (eds). Available online October 22, 2012; updated 7/29/16.

Textbook chapters

Noyes' Knee Disorders: Surgery, Rehabilitation, Clinical Outcomes, 2nd Edition. Noyes FR (ed), Barber-Westin SD (associate ed), Elsevier, Philadelphia, 2016.

1. Noyes FR, Dettlerline A, Babb J: Chapter 1: Medial and Anterior Knee Anatomy, pp. 2-22.
2. Noyes FR, Strickland J, Fester E: Chapter 2: Lateral and Posterior Knee Anatomy, pp. 23-36.
3. Noyes FR, Grood ES: Chapter 3: The Scientific Basis for Examination and Classification of Knee Ligament Injuries, pp. 37-82.
4. Noyes FR, Grood ES: Chapter 4: Knee Ligament Function and Failure, pp. 83-109.
5. Noyes FR, Barber-Westin SD: Chapter 7: Anterior Cruciate Ligament Primary Reconstruction: Diagnosis, Operative Techniques, and Clinical Outcomes, pp. 137-220.
6. Noyes FR, Barber-Westin SD: Chapter 8: Anterior Cruciate Ligament Revision Reconstruction: Graft Options and Clinical Outcomes, pp. 221-257.
7. Barber-Westin SD, Noyes FR: Chapter 10: Scientific Basis of



- Rehabilitation after Anterior Cruciate Ligament Autogenous Reconstruction, pp. 268-292.
8. Heckmann TP, Noyes FR, Barber-Westin SD: Chapter 11: Rehabilitation of Primary and Revision Anterior Cruciate Ligament Reconstructions, pp. 293-329.
 9. Barber-Westin SD, Noyes FR: Chapter 13: Risk Factors for Anterior Cruciate Ligament Injuries in the Female Athlete, pp. 344-372.
 10. Barber-Westin SD, Noyes FR: Chapter 14: Decreasing the Risk of Anterior Cruciate Ligament Injuries in Female Athletes, pp. 373-404.
 11. Noyes FR, Barber-Westin SD: Chapter 15: Function of the Posterior Cruciate Ligament and Posterolateral Ligament Structures, pp. 406-446.
 12. Noyes FR, Barber-Westin SD: Chapter 16: Posterior Cruciate Ligament: Diagnosis, Operative Techniques, and Clinical Outcomes, pp. 447-526.
 13. Noyes FR, Barber-Westin SD: Chapter 17: Posterolateral Ligament Injuries: Diagnosis, Operative Techniques, and Clinical Outcomes, pp. 527-577.
 14. Noyes FR, Barber-Westin SD, Heckmann TP: Chapter 18: Rehabilitation of Posterior Cruciate Ligament and Posterolateral Reconstructive Procedures, pp. 578-607.
 15. Noyes FR, Barber-Westin SD: Chapter 19: Medial and Posteromedial Ligament Injuries: Diagnosis, Operative Techniques, and Clinical Outcomes, pp. 608-635.
 16. Heckmann TP, Noyes FR, Barber-Westin SD: Chapter 20: Rehabilitation of Medial Ligament Injuries, pp. 636-652.
 17. Noyes FR, Barber-Westin SD: Chapter 23: Meniscus Tears: Diagnosis, Repair Techniques, and Clinical Outcomes, pp. 677-718.
 18. Noyes FR, Barber-Westin SD: Chapter 24: Meniscus Transplantation: Diagnosis, Operative Techniques, and Clinical Outcomes, pp. 719-759.
 19. Heckmann TP, Noyes FR, Barber-Westin SD: Chapter 25: Rehabilitation of Meniscus Repair and Transplantation Procedures, pp. 760-771.
 20. Noyes FR, Barber-Westin SD: Chapter 26: Tibial and Femoral Osteotomy for Varus and Valgus Knee Syndromes: Diagnosis, Osteotomy Techniques, and Clinical Outcomes, pp. 773-847.
 21. Noyes FR, Heckmann TP, Barber-Westin SD: Chapter 28: Rehabilitation after Tibial and Femoral Osteotomy, pp. 858-867.
 22. Heckmann TP, Noyes FR, Barber-Westin SD: Chapter 29: Correction of Hyperextension Gait Abnormalities: Preoperative and Postoperative Techniques, pp. 868-881.
 23. Noyes FR, Barber-Westin SD: Chapter 30: Unicompartamental Knee Replacement for Varus or Valgus Malalignment, pp. 882-910.
 24. Noyes FR, Barber-Westin SD: Chapter 35: Operative Options for Extensor Mechanism Malalignment and Patellar Dislocation, pp. 970-1013.
 25. Noyes FR, Barber-Westin SD: Chapter 37: Unicompartamental Patellofemoral Replacement, pp. 1036-1057.
 26. Noyes FR, Barber-Westin SD: Chapter 38: Prevention and Treatment of Knee Arthrofibrosis, pp. 1059-1102.
 27. Noyes FR, Barber-Westin SD: Chapter 40: Diagnosis and Treatment of Complex Regional Pain Syndrome, pp. 1122-1160.
 28. Noyes FR, Barber-Westin SD: Chapter 41: Cincinnati Knee Rating System, pp. 1162-1186.
 29. Barber-Westin SD, Noyes FR: Chapter 42: International Knee Documentations Committee Rating System, pp. 1190-1210.
 30. Barber-Westin SD, Noyes FR: Chapter 43: Rating of Athletic and Daily Functional Activities: Knee-Specific Scales and Global Outcome Instruments, pp. 1211-1221.
 31. Barber-Westin SD, Noyes FR: Chapter 44: Articular Cartilage Rating Systems, pp. 1222-1234.
 32. Barber-Westin SD, Noyes FR: Chapter 45: Knee Arthroplasty and Patellofemoral Rating Systems, pp. 1235-1244.
- Chapters updated, revised, and in press for ACL Injuries in the Female Athlete. Causes, Impacts and Conditioning Programs, 2nd Edition Noyes FR, Barber-Westin SD (eds), Springer-Verlag, Berlin Heidelberg, in press.
1. Noyes FR, Barber-Westin SD: Chapter 1: The ACL: Anatomy, Biomechanics, Mechanisms of Injury, and the Gender Disparity. In preparation, 2017.
 2. Barber-Westin SD, Noyes FR: Chapter 2: Consequences of Complete ACL Ruptures. In preparation, 2017.
 3. Noyes FR, Barber-Westin SD: Chapter 4: Risks of Future Joint Arthritis and Reinjury after ACL Reconstruction.



4. Barber-Westin SD, Noyes FR: Chapter 15: Effect of Fatigue and Gender on Lower Limb Neuromuscular Function. In preparation, 2017.
5. Barber-Westin SD, Noyes FR: Chapter 17: Testing for Neuromuscular Problems and Athletic Performance.
6. Noyes FR, Barber-Westin SD: Chapter 18: Sportsmetrics ACL Intervention Training Program: Components, Results.
7. Barber-Westin SD, Noyes FR: Chapter 19: Sports-Specific Programs for Soccer, Basketball, Volleyball, and Tennis.
8. Noyes FR, Barber-Westin SD: Chapter 21: ACL Injury Prevention Warm-up Programs.
9. Barber-Westin SD, Noyes FR: Chapter 22: Effect of Intervention Programs on Reducing the Incidence of ACL Injuries, Improving Neuromuscular Deficiencies, and Enhancing Athletic Performance.
10. Heckmann TP, Noyes FR, Barber-Westin SD: Chapter 24: Rehabilitation After ACL Reconstruction.
11. Noyes FR, Barber-Westin SD: Chapter 27: Functional Assessment of Neuromuscular Function Before Return to Sports After ACL Reconstruction.
12. Barber-Westin SD, Noyes FR: Chapter 29: Promotion of ACL Intervention Training Worldwide.

Manuscripts and Book Chapters Under Review/ In Press

1. Noyes FR, Huser LE, Jurgensmeier D, Walsh J, Levy MS: Is an anterolateral ligament reconstruction required in ACL-reconstructed knees with associated injury to the anterolateral structures? A robotic analysis of rotational knee stability. In press, Am J Sports Med.
2. Noyes FR, Huser LE, Levy MS: Rotational knee instability in ACL-deficient knees: Role of the anterolateral ligament and iliotibial band as defined by tibiofemoral compartment translations and rotations. In press, J Bone Joint Surg Am.
3. Noyes FR, Barber-Westin SD: Decision-making and surgical treatment of PCL ruptures. In Scott WN (ed.): Insall & Scott Surgery of the Knee, 6th Edition. Elsevier, Philadelphia.
4. Noyes FR, Barber-Westin SD: ACL-deficiency in the varus-angulated knee: diagnosis, surgical techniques, clinical outcomes. In Prodromos C (ed): The Anterior Cruciate Ligament:

Reconstruction and Basic Science, 2nd Edition. Elsevier, Philadelphia.

5. Barber-Westin SD, Noyes FR: Effect of fatigue protocols on lower limb neuromuscular function. Implications for ACL injury prevention training: a systematic review. In press, Am J Sports Med
6. Noyes FR, Barber-Westin SD: Robotic medial unicompartmental knee arthroplasty: return to recreational sports and employment in active patients. In preparation, Journal of Arthroplasty.
7. Noyes FR, Barber-Westin SD: Robotic patellofemoral arthroplasty in younger patients. In preparation, J Bone Joint Surgery Am.

Abstracts under review

1. Frank R. Noyes, Lauren E. Huser, Darin Jurgensmeier, James Walsh, Martin S. Levy. ACL Reconstruction with Lateral ALL/ ITB Injury: Is Anterolateral Reconstruction Needed to Restore Stability? 2017 AAOS Annual Meeting & 2017 AOSSM Specialty Day
2. Frank R. Noyes, Sue Barber-Westin, Martin Levy. Are Anticoagulants Required after High Tibial Osteotomy to Prevent Venous Thromboembolism Events? 2017 AAOS Annual Meeting
3. Frank R. Noyes, Sue Barber-Westin, Cassie Fleckenstein, Jenny Riccobene. Patellofemoral Arthroplasty in Younger Patients: Are Recreational Activities Feasible? 2017 AAOS Annual Meeting

Current Major Studies

1. Long-term Clinical Outcomes Following Meniscus Transplantation
2. High Tibial Osteotomy with TOMA Fix Locking Plate
3. MPFL Reconstruction with Proximal Patellar Realignment
4. ACL Revision with Tibial and/or Femoral Tunnel Bone Grafting
5. Short and Long-term Clinical Outcomes Following MAKO Patellofemoral and Tibiofemoral Joint Replacements
6. Cartilage Restoration - OAT, Carticel
7. Femoral Osteotomy
8. Return to Recreational Activities and Work Following Total Knee Replacement
9. Blood Flow Restriction Training for Severe Muscle Atrophy

Shoulder Division: Clinical Outcome Studies & Applied Clinical Research



The Shoulder Center at Cincinnati SportsMedicine and Orthopaedic Center had a very productive year in 2016. Under the direction of Drs. Samer Hasan, Thomas Lindendorf, and Marc Galloway, the Center is a destination for patients seeking quality nonoperative and operative treatment of their shoulder and elbow conditions and injuries. In addition, the Center continues to lead in various shoulder related research studies. Dr. Hasan is involved with two major, multi-center studies. The first is a five-year, post-market study of the DJO reverse shoulder prosthesis. The second is a two-year randomized, investigational device exemption study of the OrthoSpace InSpace balloon device for the treatment of massive irreparable rotator cuff tears. Dr. Lindendorf continues to evaluate a device to more accurately measure glenohumeral rotation. Full details on our other studies, submitted abstracts, publications and book chapters can be found below.

Personnel: Cassie Fleckenstein, Jennifer Riccobene, Cori Luther

Publications

1. Hasan SS. Perspective on "Accuracy of palpation-directed intra-articular glenohumeral injection confirmed by magnetic resonance arthrography" by Powell et al., *Orthopedics Today*, in press.
2. Erickson B, Bhatia S, Biswas D, Verma NN. Propionibacterium acnes resulting in surgical infection following Latarjet reconstruction of the shoulder. *KSSTA*. 2016 Jun;24(6):1968-71.
3. Hamamoto JT, Leroux T, Chahla J, Bhatia S, Higgins JD, Romeo AA, Yanke AB, Verma NN. Assessment and Evaluation of Glenoid Bone Loss. *Arthrosc Tech*. 2016 Aug 22;5(4):e947-e951.
4. Hasan, S.S. "At Issue: Prosthetic Shoulder Arthroplasty, Part 1: Evolution of surgical techniques shoulder minimize complications", *Orthopedics Today*, October, 2016.
5. Hasan, S.S. "At Issue: Prosthetic Shoulder Arthroplasty, Part 2: Emerging technological advances pave way for future patient care", *Orthopedics Today*, November, 2016.

Manuscripts/Textbook chapters under review, in press

1. Hasan SS. Clavicle Fractures. Book chapter in *Clavicle Injuries: A Case-Based Guide to Diagnosis and Treatment*, Groh (ed.). In Press.



Abstracts

1. Hasan, S.S., Levy, J.C., Leitze, Z.R., Kumar, A.G., Krupp, R.J., Harter, D.G., "Multi-center prospective study of a reverse shoulder prosthesis with a lateralized glenosphere", 83rd Annual Meeting of the American Academy of Orthopaedic Surgeons, Orlando, Florida, March 1-4, 2016.
2. Hasan, S.S., Levy, J.C., Leitze, Z.R., Kumar, A.G., Krupp, R.J., Harter, D.G., "Reverse shoulder prosthesis with a lateralized glenosphere: A multi-center prospective study", International Congress of Shoulder and Elbow Surgery, Jeju, South Korea, May 17-20, 2016.
3. Hasan, S.S., Rolf, R.H., Scheuerman, C., Eten, K., Elsass, T.R. "Single shot versus continuous interscalene block for postoperative pain control following primary shoulder arthroplasty: A prospective randomized clinical trial", Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, California, March 13-17, 2017, accepted.
4. Hasan, S.S., Rolf, R.H., Scheuerman, C., Eten, K., Elsass, T.R. "Single shot versus continuous interscalene block for postoperative pain control following primary shoulder arthroplasty: A prospective randomized clinical trial", Annual Meeting of the American Shoulder and Elbow Surgeon, San Diego, California, March 18, 2017, accepted.

Current Studies

1. Distal Biceps Tendon Repairs: Two Incision vs. Single Incision
2. Results of Prosthetic Shoulder Arthroplasty in Patients Under Age 40
3. Multicenter Study - Reverse Total Shoulder Replacement
4. Effect of CPM on Range of Motion Following Rotator Cuff Repair
5. Glenohumeral Shoulder Rotation and Arch of Motion in Overhead Athletes
6. Multicenter Study- Shoulder Arthroplasty Failure Experience
7. Multicenter study- InSpace Device for the Treatment of FullThickness Massive Rotator Cuff Tears

Hip Division: Clinical Outcome Studies & Applied Clinical Research



The prospective clinical outcomes hip division is responsible for every phase of all patient-related studies under the direction of Dr. Sanjeev Bhatia. The Hip Arthroscopy and Joint Preservation Center aims to provide patients from the Midwest region and beyond with a cutting edge, multidisciplinary approach involving injuries of the hip. Using the latest in newly developed arthroscopic and open surgical techniques, newly developed cartilage technologies, and non-surgical rehab protocols and injections, the Center aims to provide young, active individuals with the

best evidence-based non-arthroplasty treatment options for relieving hip and knee pain, delaying the progression of end stage arthritis, and returning individuals to sports and function. Additionally, the Center is actively engaged in research and education efforts to advance the understanding of hip and joint preservation, sports medicine, and orthopaedic wellness.

Personnel: Sue Barber-Westin, Cassie Fleckenstein, Jennifer Riccobene, Cori Luther

Publications

1. Bhatia S, Nowak DD, Briggs KK, Patterson DC, Philippon MJ. Outerbridge Grade IV Cartilage Lesions in the Hip Identified at Arthroscopy. *Arthroscopy*. 2016 May;32(5):814-9.
2. Ho CP, Ommen ND, Bhatia S, Saroki AJ, Goljan P, Briggs KK, Philippon MJ. Predictive Value of 3-T Magnetic Resonance Imaging in Diagnosing Grade 3 and 4 Chondral Lesions in the Hip. *Arthroscopy*. 2016 Sep;32(9):1808-13.
3. Chahla J, Soares E, Bhatia S, Mitchell JJ, Philippon MJ. Arthroscopic Technique for Acetabular Labral Reconstruction Using Iliotibial Band Autograft. *Arthrosc Tech*. 2016 Jun 27;5(3):e671-7.
4. Bhatia S, Briggs KK, Philippon MJ, Soares E. Postoperative Alpha Angle Not Associated with Outcomes 5 Years Following Hip Arthroscopy for FAI. *Arthroscopy*. 2016 June 32;(6 Supplement):e12-13.
5. Bhatia S, Chahla J, Dean C, Ellman MB. Labral Reconstruction: A Novel "Kite Technique" for Improved Efficiency and Graft Control. *Arthrosc Tech*. 2016 Apr 4;5(2):e337-42.

Manuscripts/Textbook chapters under review, in press

1. Greenspoon JA, Bhatia S, Petri M, Millett PJ. Acromioclavicular Joint Reconstruction. *Case Competencies in Orthopaedic Surgery*. Philadelphia, PA: Elsevier, Inc. 2015. In Press.
2. Bhatia S, Greenspoon JA, Petri M, Millett PJ. Clavicle Fractures – Open Reduction Internal Fixation. *Case Competencies in Orthopaedic Surgery*. Philadelphia, PA: Elsevier, Inc. 2015. In Press.
3. Greenspoon JA, Petri M, Bhatia S, Millett PJ. Rotator cuff repairs in Athletes. *Sports injuries of the upper limb*. London, England: Springer-Verlag 2015. In Press
4. Bhatia S, Briggs K, Philippon MJ. "Labral Lesions of the Hip." *ESSKA: Arthroscopy*. Springer-Verlag 2015. In Press.



Local, National, and International Meeting Presentations



Frank R. Noyes, MD

1. Role of Ultrasound: Diagnosis of Sports Medicine Injuries and Injection Techniques. Panel. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
2. Treatment Options for Patellofemoral Disorders. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
3. Comprehensive Knee Exam: Clinical Rationale and Diagnosis. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.
4. Treatment of the ACL Deficient Knee: Presentation of Cases to the Expert Panel. Moderator. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.
5. Scientific Basis and Development of the Sportsmetrics™ Neuromuscular Training Programs. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.
6. Comprehensive Examination of the Knee. Live Demonstration. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.
7. Treatment of Knee Arthrofibrosis. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.
8. Surgical Treatment of PCL and Posterolateral Ligament Injuries. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 31, 2016.
9. Meniscus Repair and Transplantation: What's New in 2016. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 31, 2016.
10. High Tibial Osteotomy: Techniques and Surgical Results. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 31, 2016.
11. Partial Joint Replacement: Unicompartamental and Patellofemoral. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 31, 2016.
12. What is the Function of the Anterolateral Ligament and the Goal of an Anterolateral Reconstruction? Annual Meeting Herodicus Society, Colorado Springs, June, 2016.
13. High Tibial Osteotomy: Techniques and Surgical Results. AOSSM Sharpen Your Surgical Skills Course, Chicago, Sept. 24, 2016.
14. Rehabilitation Following HTO. AOSSM Sharpen Your Surgical Skills Course, Chicago, Sept. 24, 2016.
15. What is Normal Alignment and How Much to Correct? AOSSM Sharpen Your Surgical Skills Course, Chicago, Sept. 24, 2016.
16. The Comprehensive Knee Exam Made Simple for Physicians. Orthopaedic Summit, Las Vegas, NE, Dec. 18, 2016.
17. The Comprehensive Knee Exam Made Simple for Physical Therapists. Orthopaedic Summit, Las Vegas, NE, Dec. 19, 2016.
18. What is Fact or Fiction, Surgical Decisions. Orthopaedic Summit, Las Vegas, NE, Dec. 18, 2016.

Local, National, and International Meeting Presentations



Thomas N. Lindenfeld, MD

1. Shoulder Anatomy Review - What You Need to Know. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
2. The Rotator Cuff: Case Based Symposium. Faculty. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
3. Comprehensive Examination of the Shoulder. Live Demonstration. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
4. Role of Ultrasound: Diagnosis of Sports Medicine Injuries and Injection Techniques. Panel Faculty. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
5. Elbow Anatomy and Basic Arthroscopy. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 29, 2016.
3. Faculty for Pre-conference Cadaver Lab, Current Solutions in Shoulder and Elbow Surgery, DJO Shoulder Replacement Stations
4. Faculty for Reverse Total Shoulder Replacement Breakout Sessions, Current Solutions in Shoulder and Elbow Surgery, Tampa, Florida, February 4-7, 2016.
5. Speaker, "Rotator Cuff Repair in the Overhead Athlete", Mercy SportsMedicine Symposium, Cincinnati, Ohio, February 27, 2016.
6. Faculty, 5th Annual Fellows Course in Shoulder Arthroplasty, Dr. A Green, Course Director. "Design Considerations in Anatomic Total Shoulder Arthroplasty", Indianapolis, Indiana, April 7-9, 2016.
7. Faculty, 5th Annual Fellows Course in Shoulder Arthroplasty, Dr. A Green, Course Director. "Starting a Shoulder Specialty Practice", Indianapolis, Indiana, April 7-9, 2016.
8. Faculty, 5th Annual Fellows Course in Shoulder Arthroplasty, Dr. A Green, Course
9. Director. "Management of Glenoid Bone Loss", Indianapolis, Indiana, April 7-9, 2016.
10. Instructor, AANA Course: Advanced Shoulder and Elbow: Evidence, Outcomes, and Controversies Course. Rosemont, Illinois, April 29-30, 2016.



Samer S. Hasan, MD, PhD

1. Moderator, Ohio Shoulder and Elbow Surgeons. "Shoulder arthritis in patients under the age of 50". Columbus, Ohio, January 29-30, 2016.
2. Faculty, Current Solutions in Shoulder and Elbow Surgery, Talk on "Humeral Bone Loss with Instability – Neglect, Remplissage, Implant?" Tampa, Florida, February 4-7, 2016.
11. Speaker, Lunch workshop (sponsored by DJO), "RSP Design Rationale, Evolution, and 13 Years of Clinical Experience", ICSES, Jeju Island, South Korea, May 19, 2016.
12. Faculty and Moderator, Advances on the Knee and Shoulder. "Complications of SLAP and Biceps Surgeries", Hilton Head Island, South Carolina, May 28-31, 2016.
13. Faculty and Moderator, Advances on the Knee and Shoulder. "Rotator Cuff: Case Based Symposium", Hilton Head Island, South Carolina, May 28-31, 2016.
14. Faculty and Moderator, Advances on the Knee and Shoulder.

Local, National, and International Meeting Presentations

- “Shoulder Replacement Surgery”, Hilton Head Island, South Carolina, May 28-31, 2016.
15. Faculty and Moderator, Advances on the Knee and Shoulder. “The Stiff Shoulder”, Hilton Head Island, South Carolina, May 28-31, 2016.
 16. Faculty and Moderator, Advances on the Knee and Shoulder. “Posterior and Multidirectional Instability”, Hilton Head Island, South Carolina, May 28-31, 2016.
 17. Invited Speaker and Moderator, “Decision making in Glenoid Deformities-Indications of Reverse Design with Lateral Center of Rotation”, DVSE – German Shoulder and Elbow Society, Bremen, Germany, June 9-11, 2016.
 18. Speaker, Lunch workshop (sponsored by DJO), “Common pitfalls in reverse shoulder arthroplasty – and why RSP may be the solution”, DVSE – German Shoulder and Elbow Society, Bremen, Germany, June 10, 2016.
 19. Member, Organizing Committee, and Conference Co-chair, Orthopaedic Program, International Musculoskeletal Society (I.M.S.). “Treatment of Proximal Biceps Tendon and SLAP Injuries”, Beirut, Lebanon, July 28-30 2016.
 20. Member, Organizing Committee, and Conference Co-chair, Orthopaedic Program, International Musculoskeletal Society (I.M.S.). “Arthroscopic Anterior Stabilization”, Beirut, Lebanon, July 28-30 2016.
 21. Member, Organizing Committee, and Conference Co-chair, Orthopaedic Program, International Musculoskeletal Society (I.M.S.). “Shoulder Arthroplasty 2016 Update”, Beirut, Lebanon, July 28-30 2016.
 22. Member, Organizing Committee, and Conference Co-chair, Orthopaedic Program, International Musculoskeletal Society (I.M.S.). “(Treatment of) Proximal Humerus Fractures”, Beirut, Lebanon, July 28-30 2016.
 23. Member, Organizing Committee, and Conference Co-chair, Orthopaedic Program, International Musculoskeletal Society (I.M.S.). Moderator, and Lab leader: cadaver workshops. Beirut, Lebanon, July 28-30 2016.
 24. Speaker, “Evidence-Based Talk for the Athletic Trainer: Anterior Shoulder Instability”, Cincinnati, Ohio, October 5, 2016.



Matthew L. Busam, MD

1. The Rotator Cuff: Case Based Symposium. Faculty. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
2. Non-Prosthetic Treatment of Shoulder Arthritis. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
3. Role of Ultrasound: Diagnosis of Sports Medicine Injuries and Injection Techniques. Panel Faculty. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.
4. Distal Biceps Injuries. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 29, 2016.
5. Avoiding Complications in ACL Surgery. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 30, 2016.

Local, National, and International Meeting Presentations



Sanjeev Bhatia, MD

1. The Rotator Cuff: Case Based Symposium. Faculty. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 28, 2016.

2. The Role of the Labrum. Podium Presentation at 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 29th, 2016.

3. Capsular Management

During Hip Arthroscopy. Podium Presentation at 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 29th, 2016.

4. Comprehensive Examination of the Hip. Live Demonstration. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, SC. May 29, 2016.
5. Postoperative Alpha Angle Not Associated With Outcomes 5 Years Following Hip Arthroscopy. Podium presentation at the 2016 Arthroscopy Association of North America (AANA) Annual Meeting, Boston, MA. April 15th, 2016.
6. Inside-Out Meniscus Repair: Still the Gold Standard. Podium Presentation at 2016 Arthroscopy Association of North America Fall Meeting. Las Vegas, NV. November 11th, 2016.

2015-2016 Fellows

Dr. Matthew Beck: The Key to the Knee: Lateral and Posterolateral Knee Anatomy. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, South Carolina. May 28th - 31st, 2016.

Dr. Leslie Schwindel: The Key to the Knee: Medial and Anterior Knee Anatomy. 31st Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, South Carolina. May 28th - 31st, 2016.

Dr. Firas Kawtharani: Advances in Total Knee Replacement. 32nd Annual Advances on the Knee, Shoulder and Sports Medicine Conference. Hilton Head Island, South Carolina. May 24th - 27th, 2016.

Biomechanics and Robotics Division

Under the direction of Edward S. Grood, PhD (Professor Emeritus, University of Cincinnati Department of Biomedical Engineering) and Frank R. Noyes, MD, the Biomechanics and Robotics Division conducts in-vitro studies on cadaveric knees using a custom-designed robot based on the Grood-Suntay coordinate system. The robot has the ability to apply precise motions and loads simulating clinical tests, such as the Lachman and pivot-shift, for the purpose of better understanding knee ligament function, replacement. This is achieved through the robot's measurement of

tibial translations and rotations in 6 degrees-of-freedom.

Personnel: Edward S. Grood, PhD, Lauren Huser, Clinical Fellows

Studies Completed

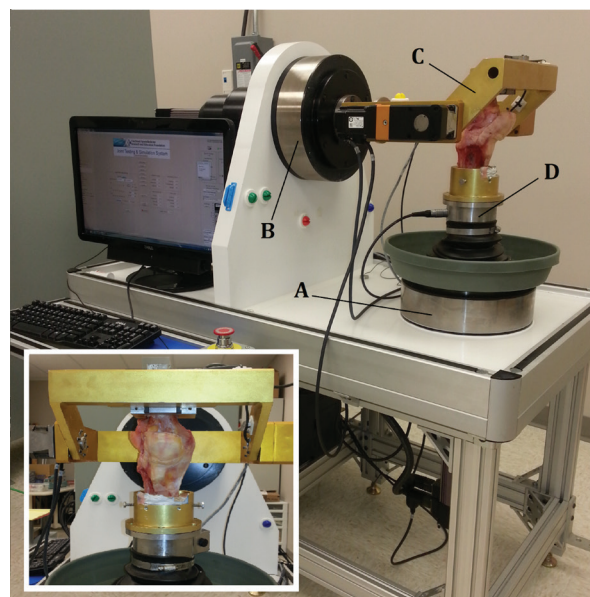
1. Anterolateral Ligament and Iliotibial Band Control of Rotational Stability in the Anterior Cruciate Ligament-Intact Knee: Defined by Tibiofemoral Compartment Translations and Rotations. Huser LE, Noyes FR, Jurgensmeier D, Levy MS. *Arthroscopy* 2017;33(3):595-604.
2. Editorial Commentary: Lateral Extra-Articular Reconstructions With Anterior Cruciate Ligament Surgery: Are These Operative Procedures Supported by In Vitro Biomechanical Studies? Noyes FR. *Arthroscopy* 2016;32(12):2312-2615.
3. Rotational Knee Instability in ACL-Deficient Knees: Role of the Anterolateral Ligament and Iliotibial Band as Defined by Tibiofemoral Compartment Translations and Rotations. Noyes FR, Huser LE, Levy MS. *J Bone Joint Surg Am* 2017;99:305-314.
4. Is an Anterolateral Ligament Reconstruction Required in ACL-Reconstructed Knees with Associated Injury to the Anterolateral Structures? A Robotic Analysis of Rotational Knee Stability. Noyes FR, Huser LE, Jurgensmeier D, Walsh J, Levy MS. *Am J Sports Med* 2017;45(5):1018-1027.

Manuscripts Under Review/In Press

1. The Effect of an ACL Reconstruction in Controlling Rotational Knee Stability in Knees with Physiologically Lax Secondary Restraints as Defined by Tibiofemoral Compartment Translations and Graft Forces. Noyes FR, Huser LE, Levy MS. Submitted to the *Journal of Bone and Joint Surgery* in November 2016. Pending Review.

Current Studies

1. Comparison of iliotibial band tenodesis to an anterolateral ligament reconstruction in ACL-intact and ACL-reconstructed knees.
2. Ability of an STG ACL reconstruction using the Arthrex TightRope device to restore rotational knee stability
3. Determination of the preconditioning protocol required at time-of-surgery to produce a sufficiently pre-tensioned, steady-state graft that will not undergo detrimental elongation following implantation. This will be evaluated in both STG and B-PT-B grafts.



Specimens are mounted to a six-degree-of-freedom (DOF) robot with a A) vertical actuator (controlling compression-distraction and internal-external rotation), B) horizontal actuator (controlling anterior-posterior translation and varus-valgus rotation), C) flexion-extension yoke holding a passive linear guide to maintain medial-lateral translation (not visible), and D) a 6-DOF load cell. The inset shows a front view of a mounted

Advances on the Knee, Shoulder & Sports Medicine Conference

This three and one-half day course provides presentations on the latest controversies and clinical, surgical, and rehabilitation recommendations for the knee, shoulder, hip, and sports medicine problems. Cincinnati SportsMedicine has long recognized the collaborative efforts of orthopaedists, physical therapists, athletic trainers and many other health professionals to successfully



diagnose and treat musculoskeletal problems.

In 1986, in conjunction with the American Academy of Orthopaedic Surgeons, Cincinnati SportsMedicine Research & Education Foundation co-sponsored a continuing medical education program for orthopaedic medical specialists with the emphasis on the diagnosis and treatment of knee, shoulder, and sports medicine problems. Sponsored by Cincinnati SportsMedicine, this program has evolved to one of the premier continuing education programs in the country, with an internationally recognized guest faculty.

The Annual Advances on the Knee and Shoulder Conference

is one of the few comprehensive continuing education courses that includes clinical, surgical, and rehabilitation techniques for knee, shoulder, elbow, hip, and sports medicine pathology.





Our internationally recognized, multi-disciplinary faculty share their experiences, research, and clinical outcomes to stimulate medical professionals to rethink their approach to many musculoskeletal challenges.

The 2016 meeting was our 31st annual Advances on the Knee, Shoulder and Sports Medicine conference. We welcomed over 200 orthopaedic surgeons, physician assistants, physical therapists, physical therapy assistants, and athletic trainers to this conference. In addition to 200 course participants, we welcomed 17 exhibitors. Course participants enjoyed listening to over 32 hours of presentations, breakouts, and panel discussions on the treatment of disorders of the knee, shoulder, elbow, hip, and sports medicine.



2016 Course Faculty:

Frank R. Noyes, MD
 James R. Andrews, MD
 Sanjeev Bhatia, MD
 Matthew L. Busam, MD
 J.W. Thomas Byrd, MD
 Samer S. Hasan, MD, PhD
 Thomas N. Lindendorf, MD
 G. Peter Maier, II, MD
 Claude T. Moorman, III, MD
 Stephen J. O'Brien, MD
 Anthony A. Romeo, MD
 Edward M. Wojtyls, MD
 Matthew B. Beck, MD
 Firas I. Kawtharani, MD
 Leslie E. Schwindel, MD
 Timothy P. Heckmann, PT, ATC
 George J. Davies, DPT, PT
 Julie Jasontek, PT, MHS
 Michael A. McCormack, Jr., PT, MHS
 Russell M. Paine, PT
 Kevin E. Wilk, DPT, PT
 Stephanie L. Smith, MS

Neuromuscular Studies, Sportsmetrics Training Division

The current major goal of the Neuromuscular Studies and Sportsmetrics Training Division is to develop and implement neuromuscular training programs that are effective in both preventing noncontact ACL injuries and improving athletic performance indicators. In addition, we provide WIPP (Warm Up for Injury Prevention and Performance) training to all Mercy Health schools.



We train and educate Mercy Health physical therapists and athletic trainers in order to provide the program in rehab and at the schools. The formal Sportsmetrics program, used as end-stage rehabilitation after ACL reconstruction, is evaluated for its effectiveness in reducing the high incidence of re-injury as athletes return to high-risk sports such as soccer and basketball. The targeted groups for training are high school female athletes involved in a variety of sports such as soccer, basketball, volleyball, and lacrosse.

Personnel: Stephanie Smith, Thomas Campbell, Sue Barber-Westin, Daniel Clifford

Current Studies

1. Effect of Sportsmetrics Training After ACL Reconstruction in Preventing Re-Injuries Upon Return to Sport.
2. Effect of Sportsmetrics Training in Local Female High School Athletes in Preventing Noncontact ACL Injuries.
3. Effect of an Advanced Sportsmetrics Training Program in Local Female High School Athletes in Preventing Noncontact ACL Injuries and Improving Sports Performance.

Number of Athletes Trained

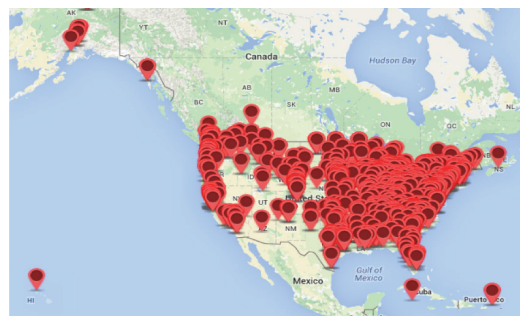
- 3407 athletes trained in the Cincinnati area since 2001 with overall significant improvements in neuromuscular indices, strength and conditioning levels
- 166 athletes in 2016

Sportsmetrics Certification Program

Our Sportsmetrics certification program allows physical therapists, athletic trainers, and other healthcare professionals the opportunity to be part of the largest injury prevention program in the country. Our certified instructors use the scientifically-proven Sportsmetrics program as part of their rehabilitation program or in a group training scenario with high school and college athletes. Since 2002, we have certified over 1,900 individuals from 1,200 sites. We have certified trainers in all 50 states and 10 countries.

In 2016, 130 individuals from 62 sites were certified to offer the Sportsmetrics program in

their communities. Certifications were held in Cincinnati, OH; Dayton, OH and Hilton Head Island, SC.





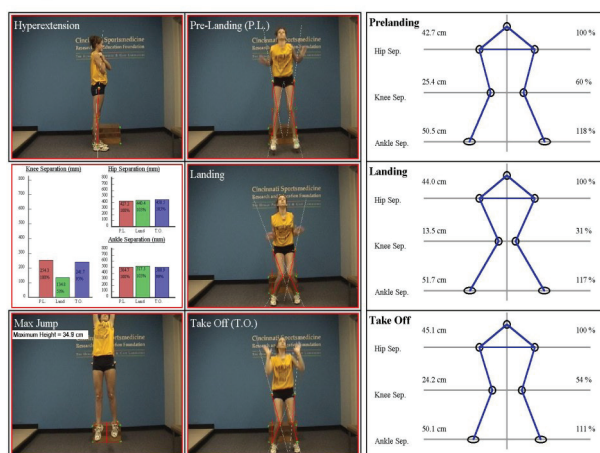
International Sites

Austria, Brazil, Canada, Finland, Iceland, United Kingdom, Japan, Qatar, The Netherlands, Singapore



On-Site Host Sites since 2002 and number certified

1. Premier Bone & Joint Centers (16): Laramie, WY
2. SERC Physical Therapy (21): Kansas City, MO
3. Dayton Children's Hospital (18): Dayton, OH
4. University of Louisiana- Lafayette (10): Lafayette, LA
5. Emeryville Sports Physical Therapy (10): Emeryville, CA
6. Therapeutic Associates (46): Portland, OR
7. Carolinas Rehabilitation (34): Charlotte, NC
8. Community Rehab (17): Fremont, NE
9. McLeod Sports Medicine (25): Florence, SC
10. Ivy Rehab (23): Hoboken, NJ
11. Victory Sports Medicine (20): Skaneateles, NY
12. North Dakota State University (12): Fargo, ND
13. Apex Physical Therapy (10): San Mateo, CA
14. Georgia Sports Medicine (21): Atlanta, GA
15. The Jackson Clinics (30): Reston, VA
16. Hurley SportsCare (13): Flint, MI
17. SportsCare Memorial Medical Center (32): Springfield, IL
18. Physiotherapy Associates (18): Denver, CO
19. Physiotherapy Associates (15): Dover, DE
20. Northern Michigan Sports Medicine Center (16):
Indian River, MI
21. Kitsap Physical Therapy & Sports Clinics (14): Silverdale, WA



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Sports Medicine Fellowship Program



The fellowship program at Cincinnati SportsMedicine and Orthopaedic Center - Mercy Health is nationally acclaimed as one of the finest post-residency, sports medicine specialty training experiences. Fellows who train at our Center receive extensive experience in surgery, clinic, academics, and research. The training is accomplished through busy surgical and clinical practices, bio

skills laboratories, rehabilitation exposure, on-the-field team coverage, formal weekly teaching conferences, monthly journal clubs, and research projects. The highly structured program includes didactic lectures on sports medicine, indications and complications, rehabilitation, anatomy, and biomechanics. All of the physicians at Cincinnati SportsMedicine & Orthopaedic Center are very dedicated to the educational program and the fellows every year express their gratitude for the surgical and clinical experience. The rehabilitation and athletic trainer faculty are as well dedicated to the program and provide a unique educational experience.

Personnel: Frank R. Noyes, Fellowship Director, Cassie Fleckenstein, Teresa Wood

Studies Completed

1. Anterolateral Ligament and Iliotibial Band Control of Rotational Stability in the ACL-Intact Knee: Defined by Tibiofemoral Compartment Translations and Rotations
2. Rotational Knee Instability in ACL-Deficient Knees: Role of the Anterolateral Ligament and Iliotibial Band as Defined by Tibiofemoral Compartment Translations and Rotations
3. Is and Anterolateral Ligament Reconstruction Required in ACL-Reconstructed Knees with Associated Injury to the Anterolateral Structures? A Robotic Analysis of Rotational Knee Stability

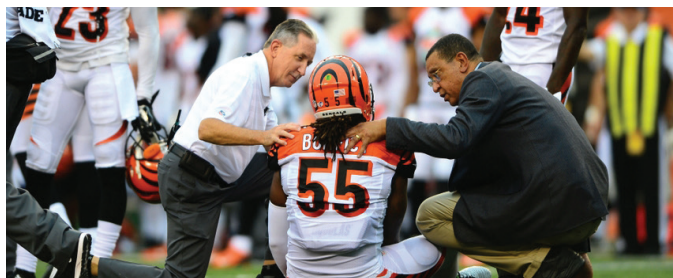
Manuscripts Under Review/In Press

1. The Effect of an ACL Reconstruction in Controlling Rotational Knee Stability in Knees with Intact and Physiologically Lax Secondary Restraints as Defined by Tibiofemoral Compartment Translations and Graft Forces

Current Studies

1. Comparison of iliotibial band tenodesis to an anterolateral ligament reconstruction in ACL-intact and ACL-reconstructed knees.
2. Ability of an STG ACL reconstruction using the Arthrex TightRope device to restore rotational knee stability
3. Determination of the preconditioning protocol required at time-of-surgery to produce a sufficiently pre-tensioned, steady-state graft that will not undergo detrimental elongation following implantation. This will be evaluated in both STG and B-PT-B grafts.

The fellowship program continues to be enriched with Marc Galloway as the Cincinnati Bengals team physician, which accompanied by all the athletic coverage at local high schools, provides for a robust sports medicine experience.



Tissue Engineering Division

Collaboration with the University of Cincinnati Department of Biomedical Engineering continued into its 40th year. This department was co-founded in by 1975 by Drs. Frank R. Noyes and Edward S. Grood as one of the first bioengineering departments in the United States. The collaborative efforts of engineers and orthopaedic surgeons has resulted in the highest honors and awards



in orthopaedic research including awards from the Orthopaedic Research and Education Foundation (OREF), American Academy of Orthopaedic Surgeons (AAOS), American Orthopaedic Society for Sports Medicine (AOSSM), and the Orthopaedic Research Society (ORS).

In 2016, the Dean of the College of Engineering announced the formation of a Department of Biomedical Engineering with a new Director and added financial resources for additional programs and faculty. We are pleased to have been asked to participate in this exciting new Department process which

will advance the ability of our Foundation's staff to enter into new and highly innovative ground breaking research. These programs have a translational application to the treatment of Orthopaedic and Sports Medicine disorders.



Cincinnati SportsMedicine
Research & Education Foundation
Noyes Knee Institute



The Jewish Hospital - Mercy Health

*A world class center of excellence that makes a
difference in patient lives*

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