

Bruce D. Beynnon, M.S, Ph.D.

Curriculum Vitae

ADDRESS:

Department of Orthopaedics & Rehabilitation
McClure Musculoskeletal Research Center
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Burlington, VT 05405-0084
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Citizenship: U.S.A.

EDUCATION:

- May 1982 B.S. - Mechanical Engineering, University of Vermont, Burlington, VT
- May 1986 M.S. - Mechanical Engineering, University of Vermont, Burlington, VT
Thesis: The Vermont Spinal Fixator for Posterior Thoracic Lumbar and Lumbosacral Spine Stabilization
- May 1991 Ph.D. - Mechanical Engineering, University of Vermont, Burlington, VT
Dissertation: The In-Vivo Biomechanics of the Anterior Cruciate Ligament, Reconstruction, and Application of a Mathematical Model to the Knee

Personal Statement

I am Professor of Orthopaedics & Rehabilitation in the College of Medicine at the University of Vermont, the Director of Research in the Dept of Orthopaedics & Rehabilitation, and hold the McClure Chair of Musculoskeletal Research.

My regard in musculoskeletal investigation is reflected by ongoing extramural research support (NIH R01, R21 and T32 awards, The Arthritis Foundation, and The Orthopedic Research Education Foundation), appointment as Associate Editor of the Journal of Orthopaedic Research, and having served as a regular member of many national peer review organizations (NIH study sections: Geriatrics & Rehabilitation Medicine; Skeletal Biology Structure and Regeneration” and currently Arthritis and musculoskeletal and Skin Diseases AMS Study Section), and international peer/expert review pannels.

During the last 36 years my research has focused on the epidemiology, treatment, and prevention of musculoskeletal trauma (knee, ankle, shoulder joints, articular cartilage, meniscus and bone). I have extensive laboratory, clinical and translational research expertise that has focused on understanding the adaptive response of the knee to ACL, meniscus, articular cartilage trauma, development of strategies to prevent loss of thigh muscle strength following ACL trauma and reconstruction, prognostic studies designed to identify the risk factors associated with ACL, Contralateral ACL, and ACL graft trauma, biomarkers (image based and synovial fluid/urine/serum based) of articular cartilage metabolism and joint structure following ACL trauma and determining how they relate to the onset and progression of post traumatic osteoarthritis, evaluation of muscle function in advanced stage knee osteoarthritis patients, and studies of rehabilitation following ACL injury and reconstruction (Arthritis Foundation). In addition, I have broad experience with spine, hip and knee implant biomechanics

ACADEMIC APPOINTMENTS:

- 07/91-05/97 Research Assistant Professor, Department of Orthopaedics, University of Vermont, Burlington, VT
- 10/91 Member of the Graduate College Faculty, University of Vermont, Burlington, VT
- 04/94 Director of Research, Department of Orthopaedics, University of Vermont, Burlington, VT
- 05/97-06/06 Associate Professor, Department of Orthopaedics, University of Vermont, Burlington, VT

07/06	Professor, Department of Orthopaedics, University of Vermont, Burlington, VT
07/06	McClure Professor of Musculoskeletal Research, Department of Orthopaedics, University of Vermont, Burlington, VT
09/18	Secondary Appointment, Professor, Department of Electrical and Biomedical Engineering, University of Vermont, Burlington, VT

AWARDS/HONORS:

- ❖ Winner of the 1988 Young Scientist Award from the American Society of Biomechanics
- ❖ Co-Winner of the North American Arthroscopy Association's O'Connor Arthroscopic Research Award, 1989 (Howe JG, Wertheimer CM, Johnson RJ, Nichols CE, Pope MH, Beynnon BD)
- ❖ Co-Winner of the SICOT M.E. Muller Research Award, presented at the annual SICOT meeting, Montreal Canada, 1990 (Howe JG, Pope MH, Johnson RJ, Beynnon BD)
- ❖ Winner of the 1993 Albert Trillat Young Investigators Award, presented by the International Society of the Knee for the work entitled, *Anterior Cruciate Ligament Strain Behavior During Rehabilitation Exercises In Vivo* (Beynnon BD, Johnson RJ, Fleming BC, Pope MH, Renström PA, Nichols CE)
- ❖ Co-Winner of the 1994 Kappa Delta Award, presented by the American Academy of Orthopaedic Surgeons for the work entitled: *The Biomechanics of the Anterior Cruciate Ligament and Bone-Patella Tendon-Bone Graft In-Vivo* (Johnson RJ, Beynnon BD, Fleming BC, Nichols CE, Renström PA, Pope MH, Howe JG)
- ❖ Winner of the 1996 O'Donoghue Sports Injury Research Award, presented by the American Orthopaedic Society for Sports Medicine for the work entitled, *The Strain Behavior of the Anterior Cruciate Ligament During Squatting and Active Flexion-Extension: A Comparison of Open and Closed Kinetic Chain Exercises* (Beynnon BD, Johnson RJ, Fleming BC, Stankewich CJ, Renström PA, Nichols CE)
- ❖ Co-Winner of the 1997 Albert Trillat Young Investigator's Award, presented by the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine for the work entitled, *The Strain Behavior of the Anterior Cruciate Ligament During Stationary Bicycling: An In Vivo Study* (Fleming BC, Beynnon BD, Renström PA, Peura GD, Nichols CE, Johnson RJ)
- ❖ Winner of the 1999 O'Donoghue Sports Injury Research Award, presented by the American Orthopaedic Society for Sports Medicine for the work entitled, *A Prospective Investigation of First Time Ankle Sprains* (Renström PA, Beynnon BD, Haugh L, Uh BS, Barker H)
- ❖ Co-Winner of the 2000 GOTS-Beiersdorf Research Award for the work entitled, *In Vivo Measurement of Anterior Cruciate Ligament Strain: Applications to Rehabilitation* (Fleming BC, Beynnon BD, Renström P, Johnson RJ, Peura GD, Nichols CE)
- ❖ Co-Winner of the 2002 Frank Stinchfield Award, presented at the Hip Society 13th Meeting for the work entitled, *Viscosity Effects on Cement Pressurization and Trabecular Bone Cement Intrusion* (Dayton MR, Churchill DL, Incavo SJ, Uroskie JA, Beynnon BD)
- ❖ Winner of the 2005 O'Donoghue Sports Injury Research Award, presented by the American Orthopaedic Society for Sports Medicine for the work entitled, *Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction with a Bone-Patellar Tendon-Bone Autograft: A prospective, randomized, double-blind comparison of accelerated versus delayed programs* (Beynnon BD, Johnson RJ, Brattbakk B, Abate JA, Fleming BD, Nichols CE)

- ❖ Winner of the 2006 National Collegiate Athletic Association (NCAA) Research Award, presented by the American Orthopaedic Society for Sports Medicine for the work entitled, *A Prospective Study of Risk Factors for First Time Inversion Ankle Ligament Trauma* (Beynnon BD, Vacek PM, Murphy D, Paller D)
- ❖ Winner of the 2006 Hughston Award, presented by the American Orthopaedic Society for Sports Medicine for the work entitled, *Rehabilitation After Anterior Cruciate Ligament Reconstruction: A prospective, randomized, double-blind comparison of programs administered over 2 different time intervals* (Beynnon BD, Uh BS, Johnson RJ, Abate JA, Nichols CE, Fleming BC, Poole AR, Roos H) *Am J Sports Med* 33:347-359, 2005
- ❖ Co-Winner of the 2009 Albert Trillat Young Investigator's Award, presented by the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine for the work entitled, *The Effect of Meniscectomy and Meniscal Allograft Transplantation on Knee and anterior Cruciate Ligament Biomechanics* (Spang J, Mazzocca A, Shultz S, Beynnon B)

ACADEMIC SERVICE:

Deputy Editor – *Journal of Orthopaedic Research* (2005-present)

Board of Associate Editors – *Journal of Orthopaedic Research* (2002-2005)

Editorial Board – *The American Journal of Sports Medicine; Osteoarthritis & Cartilage; Osteoarthritis Imaging*

Reviewer – *Journal of Applied Physiology, Journal of Biomechanics; Journal of Biomechanical Engineering; Journal of Orthopaedic Research; Journal of Bone and Joint Surgery; Journal of Orthopaedic and Sports Physical Therapy; and Clinical Orthopaedics and Related Research*

Extramural Peer Review Committees:

- U.S. Army Department of Defense Women's Health Program, January 21-23, 1996
- National Operating Committee on Standards for Athletic Equipment (NOCSAE)
- Alberta Children's Hospital
- Natural Sciences and Engineering Research Council (NSERC) of Canada, Ad hoc reviewer for the University-Industry Cooperative Research and Development Program, September 1997
- N.I.H. Ad hoc member of Center for Scientific Review Special Emphasis Panel (ZRG1-G -09), January 8, 1999
- N.I.H. Ad hoc member for the Geriatrics & Rehabilitation Medicine Study Section, February 24-26, 1999
- N.I.H. Ad hoc reviewer for the National Institute of Arthritis and Musculoskeletal and Skin Disease Small Grant Program (RO3). Proposals submitted in response to RFA AR-99-001, March 1999
- N.I.H. Ad hoc reviewer for the Orthopedics and Musculoskeletal Study Section, June 22-23, 1999
- N.I.H. Reviewer for the Special Study Section meeting to review Tissue Engineering Grant Applications (ZRG1 SSS-M 01 SS), July 28-30, 1999
- N.I.H. Reviewer for the Special Study Section meeting to review Bioengineering Research Partnership Applications (ZRG1 SSS-M 01) and (ZRG1 SSS-M 02), November 17-19, 1999
- N.I.H. Ad hoc reviewer for the Orthopedics Study Section, February 14-15, 2000
- N.I.H. Ad hoc reviewer for the Geriatrics & Rehabilitation Medicine Study Section (ZRG1 OBM-1 01), and (ZRG1 OBM-1 02), February 24-25, 2000
- N.I.H. Reviewer for the Special Study Section meeting to review Tissue Engineering Grant Applications (ZRG1 SSS-M 01 SS), March 24, 2000
- N.I.H. Ad hoc reviewer for the Orthopedics and Musculoskeletal Study Section, June 26-27, 2000
- N.I.H. Ad hoc reviewer for the Orthopedics and Musculoskeletal Study Section, October 23-24, 2000
- N.I.H. Reviewer for the Center for Scientific Review Special Emphasis Panel (ZRG1 OBM-2 07), November 20, 2000
- N.I.H. Reviewer for the National Institute of Arthritis and Musculoskeletal and Skin Disease Special Emphasis Panel, P60 - MCRC (ZAR1 AAA-C 01), May 16-17, 2001
- Reviewer for the Finnish Ministry of Education to evaluate research in sport-biology and sport-medicine in Finland, June 4-7, 2001
- Program committee member for the International Symposium on Ligaments and Tendons - III, February 1, 2003
- N.I.H. Chairperson for the Center for Scientific Review Special Emphasis Panel (ZRG1 - MOSS-B 04), April 9, 2004
- N.I.H. Osteoarthritis Biomarkers Network Steering Committee Member, September 13, 2004
- N.I.H. Reviewer for the Musculoskeletal Tissue Engineering Study Section (MOSS G 01), November 16-17, 2004

- Reviewer for the Alberta Heritage Foundation for Medical Research Clinical Investigator Award, Alberta, Canada, December, 2004
- N.I.H. Ad hoc reviewer for the Bioengineering Sciences and Technologies IRG Study Section (ZRG1 BST-D 51), February 18, 2005
- N.I.H. Ad hoc reviewer for the Orthopedics and Skeletal Biomechanics Special Emphasis Panel (ZRG1 MOSS-A 04), March 11, 2005
- N.I.H. Ad hoc reviewer for the Center for Scientific Review Special Emphasis Panel (ZRG1 MOSS-A 91), April 6, 2005
- N.I.H. Ad hoc reviewer for the Arthritis and Musculoskeletal and Skin Diseases Special Grants Review Committee (AMS 1), October 24-25, 2005
- Member of the AOSSM Young Investigator Grants Subcommittee for 2006
- N.I.H. Ad hoc reviewer for the Skeletal Biology Structure and Regeneration Study Section, Center for Scientific Review, June 6, 2006
- Member of the Scientific Advisory Board Meeting on Short- and Longer-Term Lower Extremity Research Agenda, Ann Arbor, MI, August 17-18, 2006
- N.I.H. Osteoarthritis Biomarkers Network Steering Committee Member, November 11, 2006
- N.I.H. Arthritis and Musculoskeletal and Skin Diseases Review Committee, October 25-26, 2007
- N.I.H. Reviewer for the Mentored Career Development Application Council (ZAR1 KM-J J2 1), October 31, 2007
- Reviewer for the Alberta Heritage Foundation for Medical Research, December, 2007
- N.I.H. Reviewer for the Center for Scientific Review Special Emphasis Panel (ZRG1 MOSS-L 04), February 20, 2008
- N.I.H. Reviewer for the AMS Conflict Review Special Emphasis Panel (ZAR1 KM-J M21), October 24, 2008
- N.I.H. Reviewer for the Skeletal Biology Structure and Regeneration Study Section, Center for Scientific Review, February 9-10, 2009
- N.I.H. Reviewer for the NIAMS LRP Special Emphasis Panel (ZAR1 KM M1 1), April 30, 2010
- N.I.H. Reviewer for program project application the Cartilage Aging and Osteoarthritis Study Section (ZAG1 ZIJ-5 J5), October 28, 2010
- N.I.H. Editorial Board Member for the Special Emphasis Panel (ZRG1 MOSS-C05), May 13, 2011
- N.I.H. NIA ERP Reviewer for the Special Emphasis Panel Program Project Applications group 2011/10 ZAG1 ZIJ-9 (04). July 28, 2011
- N.I.H. Editorial Board Member for the Special Emphasis Panel (ZRG1 MOSS-C90), October 31, 2011
- N.I.H. NIAMS Clinical Trials Study Section SEP. November 2011.
-
- External Reviewer for the Arthritis Research UK, June 2012
- Therapeutics and Technology Development peer review panner for the Peer Reviewed Orthopaedic Research Program (PRORP) for the Congressionally Directed Medical Research Program (CDMRP) Musculoskeletal review panel. November 2012.
- N.I.H. NIAMS SEP/SRG group 2016/10 ZRG1-A (02) meeting April 2014
- N.I.H. NIAMS AMSC conflict review panel. SEP/SRG group 2015/01 ZAR1 YL (M2) meeting November 2015
- N.I.H. NIAMS AMSC conflict review panel. SEP/SRG group 2016/10 ZAR1 YL (M2) 1 meeting June 2016
- N.I.H. NIAMS special emphasis panel (members conflict panel for AMSC “NIAMS clinical trial review committee. SEP/SRG 2017/05 ZAR1 HL (M1) M. Clinical Observational Studies in Musculoskeletal, Rheumatic and Skin Diseases; February 2017
- Peer-reviewed Medical Research Program (PRMR) orf the Congressionally Directed Medical Research Program (CDMRP) Musculoskeletal review panel. Sept 2017
- N.I.H. NIAMS Loan Repayment Program. Special Emphasis/Review Group 2018/08 ZAR1 KM (M1) 1. April 2018
- N.I.H. NIAMS Mechanistic Ancillary Studies Review Panel. Special Emphasis/Review Group 2019/05 ZAR1 YL (M1) 1. March 7th 2019.
- N.I.H. NIAMS AMS study section (permanent member for study sections held Feb/Mar, Jun/July, and Oct/Nov). 2019 to present.
- Member of the Flanders Research Foundation peer review evaluation pannel. This foundation supports fundamental and strategic research of Universities and Strategic research centers in the Flemish community (Belgium). The funding programme ‘TBM’ is aimed at applied biomedical research with a primary societal finality. The programme is targeted specifically at late stage research projects leading to the implementation of new

therapies, diagnostic techniques or preventive methods that without government funding would not reach the patient due to a lack of industrial interest.
2022 to present

06/99-2005	Member of the American Orthopaedic Society for Sports Medicine Research Committee
12/00-6/03	Member of the Orthopedics & Musculoskeletal Study Section, Center for Scientific Review, National Institutes of Health, Bethesda, Maryland
05/03-present	Member of the External Advisory Board for the Cleveland Clinic Foundation Musculoskeletal Core Center (CCFMCC) at the Lerner Research Institute
10/03-10/04	Member of the Skeletal Biology Structure and Regeneration Study Section, Center for Scientific Review, National Institutes of Health, Bethesda, Maryland
04/04-06/2019	Member of the Scientific Advisory Board for the Tissue Engineering Resource Center (TERC), Tufts University
03/05-05/07	Member of the International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine Scientific Committee (ISAKOS)
02/19-present.	Member of the NIH NIAMS AMS study section, Center for Scientific Review, National Institutes of Health, Bethesda, Maryland

INVITED LECTURES TAUGHT AT UVM:

- “Validation of Clinical Outcome Instruments”; and “The Biomechanics of Rehabilitation Following ACL Reconstruction”. Lecturer for the Department of Orthopaedics and Rehabilitation course, Current Concepts in the Treatment & Rehabilitation of Sports Injuries held at these dates, October 1-2, 1998
- “Sports Biomechanics”. Lecturer to the Class of EE227: Biomedical Measurements, Instrumentation and Systems, April 8, 2002
- “Validation of Clinical Outcome Instruments”. Lecturer for the Department of Orthopaedics and Rehabilitation for the workshop, Basic Course in Research Techniques held on October 2, 2002
- “Risk Factors for Ankle and Knee Ligament Injuries”. Lecturer for the Department of Orthopaedics and Rehabilitation course at the Sports Medicine Conference held at these dates, October 3-4, 2002
- “ACL Injuries and the Effect of Bracing on Patients With and Without Intact ACL’s”. Lecturer for the Class of EE227: Biomedical Measurements, Instrumentation and Systems, April 6, 2004
- “Rehabilitation Following ACL Reconstruction”; “Risk Factors for Knee Ligament Trauma”; and “Risk Factors for Ankle ligament Injury”. Lecturer for the Department of Orthopaedics and Rehabilitation course at the Sports Medicine Conference held at these dates, September 30-October 1, 2004
- “Bouncing Back: Knee Injury Prevention, Reconstruction and Rehabilitation”. Lecturer at the University of Vermont Community Medical School, April 26, 2005
- “Artificial Knees”. Lecturer for the 2005 UVM/GIV Engineering, Mathematics and Computer Science Summer Institute, June 30, 2005
- “Cartilage Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 19, 2005
- “Ligament Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 21, 2005
- “Ligament Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 26, 2005
- “Orthopedic Biomedical Engineering: The Knee”. Lecturer to the Class of EE227: Biomedical Measurements, Instrumentation and Systems, April 4, 2006
- “The Relationship between Menstrual Cycle Phase and ACL Injury”; “Knee Braces – Where do we stand?”; and “Rehabilitation of the Knee Following ACL Reconstruction”. Lecturer for the Department of Orthopaedics and Rehabilitation course at the Sports Medicine Conference held at these dates, October 5-6, 2006
- “Ligament and Tendon Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 24, 2007
- “Ligament and Tendon Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 26, 2007
- “Knee Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, October 29, 2007
- “Ligament and Knee Biomechanics”. Lecturer to the Class of ME207: Biomechanics 1, September 23, 2008
- “Knee Biomechanics and Knee Bracing”. Lecturer to the Class of ME207: Biomechanics 1, September 25, 2008
- The invited lectures listed above for 2005 through 2008 have been given on an annual basis until present point in time

COURSES TAUGHT AT UVM:

ME 301, Orthopaedic Biomechanics
ME 207, Biomechanics I

BASIC SCIENCE LECTURE SERIES GIVEN TO ORTHOPAEDIC RESIDENTS AND MEDICAL STUDENTS AT UVM:

02/20/98 Clinical Research Design
03/13/98 Form and Function of Articular Cartilage (OBS 1st Edition, Chapter 1)
03/27/98 Form and Function of Articular Cartilage (OBS 1st Edition, Chapter 1)
05/01/98 Anatomy, Biology, and Biomechanics of Tendon, Ligament, and Meniscus (OBS 1st Edition, Chapter 2)
05/22/98 Anatomy, Biology, and Biomechanics of Tendon, Ligament, and Meniscus (OBS 1st Edition, Chapter 2)
07/17/98 Biomechanics of Total Hip Arthroplasty
07/31/98 Anatomy, Physiology, and Mechanics of Skeletal Muscle (OBS 1st Edition, Chapter 3)
08/14/98 Form and Function of Bone (OBS 1st Edition, Chapter 4)
10/09/98 Molecular and Cellular Biology of Inflammation and Neoplasia (OBS 1st Edition, Chapter 6)
10/30/98 Form and Function of Bone (OBS 1st Edition, Chapter 4)
12/18/98 Bone Injury, Regeneration, and Repair (OBS 1st Edition, Chapter 7)
03/12/99 Bone Injury, Regeneration, and Repair (OBS 1st Edition, Chapter 7)
04/02/99 Biomaterials (OBS 1st Edition, Chapter 10)
04/23/99 Biomaterials (OBS 1st Edition, Chapter 10)
07/16/99 Kinesiology (OBS 1st Edition, Chapter 12)
08/06/99 Kinesiology (OBS 1st Edition, Chapter 12)
08/20/99 Kinesiology (OBS 1st Edition, Chapter 12)
08/27/99 Kinesiology (OBS 1st Edition, Chapter 12)
10/01/99 Experimental Design and Statistical Analysis (OBS 1st Edition, Chapter 13)
10/22/99 Experimental Design and Statistical Analysis (OBS 1st Edition, Chapter 13)
12/29/99 Experimental Design and Statistical Analysis (OBS 1st Edition, Chapter 13)
01/28/00 Experimental Design and Statistical Analysis (OBS 1st Edition, Chapter 13)
02/11/00 Form and Function of Articular Cartilage (OBS 1st Edition, Chapter 1)
03/24/00 Form and Function of Articular Cartilage (OBS 1st Edition, Chapter 1)
04/26/00 Anatomy, Biology, and Biomechanics of Tendon, Ligament, and Meniscus (OBS 1st Edition, Chapter 2)
05/19/00 Anatomy, Biology, and Biomechanics of Tendon and Ligament (OBS 2nd Edition, Chapter 24)
06/23/00 Anatomy, Physiology, and Mechanics of Skeletal Muscle (OBS 2nd Edition, Chapter 26)
08/11/00 Biomechanics (OBS 2nd Edition, Chapter 5)
10/06/00 Biomechanics (OBS 2nd Edition, Chapter 5)
12/22/00 Biomaterials (OBS 2nd Edition, Chapter 6)
01/19/01 Biomaterials (OBS 2nd Edition, Chapter 6)
03/16/01 Form and Function of Bone (OBS 2nd Edition, Chapter 13)
03/23/01 Form and Function of Bone (OBS 2nd Edition, Chapter 13)
04/06/01 Bone Injury, Regeneration, and Repair (OBS 2nd Edition, Chapter 14)
04/13/01 Bone Injury, Regeneration, and Repair (OBS 2nd Edition, Chapter 14)
06/29/01 Articular Cartilage Repair and Osteoarthritis (OBS 2nd Edition, Chapter 18)
08/03/01 Pathophysiologic Aspects of Inflammation in Diarthrodial Joints (OBS 2nd Edition, Chapter 19)
08/29/01 Knee Biomechanics (OKU Sports Medicine 2, Chapter 28)
10/12/01 The Meniscus: Structure, Function, Repair, and Replacement (OBS 2nd Edition, Chapter 20)
10/25/01 Knee and Ankle Injuries: Why do they occur?
12/14/01 Intervertebral Disk Structure, Composition, and Mechanical Function (OBS 2nd Edition, Chapter 21)
01/04/02 Intervertebral Disk Aging, Degeneration, and Herniation (OBS 2nd Edition, Chapter 22)
01/25/02 Transplantation of Musculoskeletal Tissues (OBS 2nd Edition, Chapter 23)
03/22/02 Anatomy, Biology, and Biomechanics of Tendon and Ligament (OBS 2nd Edition, Chapter 24)
03/29/02 Anatomy, Biology, and Biomechanics of Tendon and Ligament (OBS 2nd Edition, Chapter 24)
05/10/02 Anatomy, Physiology, and Mechanics of Skeletal Muscle (OBS 2nd Edition, Chapter 26)
05/31/02 Orthopaedic Basic Science Review, 2000 Self Assessment Exam
07/17/02 Biomechanics of the Shoulder (Principles & Practice of Orthopaedic Sports Medicine, Lippincott, 2000, Chapter 21)

08/14/02 Biomechanics of Total Hip Arthroplasty
09/04/02 Anatomy and Biomechanics of the Knee (Principles & Practice of Orthopaedic Sports Medicine, Lippincott, 2000, Chapter 35)
11/15/02 Reading the Literature to Change your Clinical Practice
12/06/02 Biomechanics (OBS 2nd Edition, Chapter 5)
12/20/02 Biomaterials (OBS 2nd Edition, Chapter 6)
01/17/03 Biomaterials (OBS 2nd Edition, Chapter 6)
03/14/03 Form and Function of Bone (OBS 2nd Edition, Chapter 13)
07/18/03 Form and Function of Bone (OBS 2nd Edition, Chapter 13)
08/26/03 Biomechanics of the Hip (The Adult Hip, Lippencott-Raven Publishers, 1998, Chapter 4)
09/19/03 Elements of Research: Study design and data analysis (OBS 2nd Edition, Chapter 1)
10/03/03 Biomechanics (OBS 2nd Edition, Chapter 5)
01/23/04 Biomechanics (OBS 2nd Edition, Chapter 5)
04/02/04 Biomaterials (OBS 2nd Edition, Chapter 6)
05/07/04 Biomaterials (OBS 2nd Edition, Chapter 6)
08/20/04 Clinical Study Design
09/24/04 How to Review the Literature for Clinical Practice
10/15/04 Biomechanics (OBS 2nd Edition, Chapter 5)
12/17/04 Biomaterials (OBS 2nd Edition, Chapter 6)
01/21/05 Form and Function of Bone (OBS 2nd Edition, Chapter 13)
03/18/05 Articular Cartilage Structure, Composition, and Function (OBS 2nd Edition, Chapter 17)
04/29/05 Meniscus (OBS 2nd Edition, Chapter 20)
05/20/05 Tendon (OBS 2nd Edition, Chapter 24)
06/29/05 Osteoarthritis (OBS 2nd Edition, Chapter 18)
10/21/05 Reading the Orthopaedic Literature
04/21/06 Rehabilitation Following the ACL Reconstruction with a Bone-Patellar Tendon-Bone Graft
05/12/06 Considerations in ACL Reconstruction
08/15/06 Hip and Knee Biomechanics
09/27/06 Biomechanics of Bone
11/29/06 Biomechanics of Bone: Part II
12/20/06 Biomaterials
03/16/07 Design and Development of Research: Part I
03/30/07 Design and Development of Research: Part II
04/06/07 Anatomy, Biology, and Biomechanics of Tendon and Ligaments
04/20/07 Anatomy, Biology, and Biomechanics of Tendon and Ligaments
5/18/07 Anatomy, Biology, and Biomechanics of Tendon and Ligaments
10/05/07 ACL Injury
10/19/07 ACL Rehab
12/14/07 MCL
01/04/08 Meniscus
01/25/08 Patella Femoral Joint
02/15/08 Articular Cartilage
05/09/08 Shoulder
05/30/08 Rotator Cuff Tears
02/17/09 Tendon (Chapter 10)
04/28/09 Definitions: stress, strain, modulus of elasticity, etc. (Chapter 3)
05/19/09 Anatomy and Biomechanics (Chapter 9)
09/22/09 Bone Anatomy, Biology, Biomechanics (Chapters 14 and 15)
10/13/09 Articular Cartilage Structure/Composition/Function (Chapter 17)
10/16/09 Articular Cartilage Repair/Osteoarthritis (Chapter 18)
02/09/10 Biomechanics of the Hip and Knee (Chapter 5)
03/16/10 Biomaterials (Chapter 6)
04/09/10 Shoulder Biomechanics (Chapter 5)
05/18/10 Tendon/Ligament Anatomy, Biology, Biomechanics (Chapter 10)
09/28/10 Articular Cartilage Structure/Composition/Function

10/12/10 Articular Cartilage Repair/Osteoarthritis
02/08/11 Biomechanics of the Hip and Knee
05/17/11 Tendon/Ligament Anatomy, Biology, Biomechanics
06/11 to present. The above mentioned lectures have been given in an ongoing basis with

UNIVERSITY OF VERMONT COMMITTEES:

05/93-07/00 Member of the Committee on Human Research in the Medical Sciences
12/99-present Member of the College of Medicine Committee on Research
10/00-present Ad Hoc member of the Committee on Human Research in the Medical Sciences
10/00-07/01 Member of the Department of Orthopaedics and Rehabilitation Chair Search Committee
09/02- Member of the Faculty Senate
10/10-present Member of the UVM Medical Group Research Recognition Awards Committee

PROFESSIONAL AFFILIATIONS:

Member - Orthopaedic Research Society
Member - International Society of Biomechanics
Member - OsteoArthritis Research Society International (OARSI)

PATENTS ISSUED:

10/27/98 U.S. Patent Number 5,827,286, "Incrementally Adjustable Tibial Osteotomy Fixation Device and Method"
10/12/99 U.S. Patent Number 5,964,763, "Incrementally Adjustable Tibial Osteotomy Fixation Device and Method"
06/19/03 U.S. Patent Number 20030114856 "Internal Osteotomy Fixation Device"
02/08/05 U.S. Patent Number 6,852,113, "Internal Osteotomy Fixation Device"
06/17/08 U.S. Patent Number 7,387,644, "Knee Joint Prosthesis with a Femoral Component Which Links the Tibiofemoral Axis of Rotation with the Patellofemoral Axis of Rotation"

PATENTS IN REVIEW:

Patent Cooperation Treaty Application PCT/US09/41808 "Fixation Device and Method for Soft Tissue Grafts"

PUBLICATIONS (239 peer reviewed publications that have been cited 14,922 times as 26th July 2023):

H-index of 61 (Evaluated through Web of Science on 10th October 2023)

Peer-Reviewed Journal Publications (updated on 10th October 2023):

1. Krag MH, Beynnon BD, Pope MH, Frymoyer JW, Haugh LD: An internal fixator for posterior application to short segments of the thoracic, lumbar, or lumbosacral spine: Design & Testing. Clin Orthop 203:75-98, 1986
2. Krag MH, Beynnon BD, Pope MH, DeCoster TA: Depth of insertion of transpedicular vertebral screws into human vertebrae: Effect upon screw-vertebra interface strength. J Spinal Disord 1(4):287-94, 1988
3. Krag MH, Weaver DL, Beynnon BD: Morphometry of the thoracic and lumbar spine related to transpedicular screw placement for surgical spinal fixation. Spine 13(1):27-32, 1988
4. Krag MH, Beynnon BD: A new Halo-Vest: Rationale, design, and biomechanical comparison to standard halo-vest designs. Spine 13(1):228-35, 1988
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153. Coughlin KM, Peura GD, Fleming BC, Hallock S, Beynnon BD: In Vivo Loads in the Medial Compartment of the Rabbit Knee. Presented at the 50th Annual meeting of the Orthopaedic Research Society, San Francisco, CA, March 7-10, 2004
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155. Roemhildt ML, Fleming BC, Peura GD, Coughlin KM, Beynnon BD: Properties of Articular Cartilage in the Rabbit Tibial Plateau. Presented at the 50th Annual meeting of the Orthopaedic Research Society, San Francisco, CA, March 7-10, 2004
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158. Beynnon B, Johnson R, Sargent M, Frodsham A, Braun S, Brattbakk: Is phase of menstrual cycle associated with ACL injury in alpine skiers? Presented at the ACL Study Group meeting, Sardinia, Italy, May 29-June 4, 2004
159. Fleming BC, Beynnon BD, Uh B, Renström, Johnson RJ: Initial ACL Graft Tension and Changes in Knee Laxity during Healing. Presented at the American Orthopaedic Society for Sports Medicine meeting, Quebec City, Canada, June 24-27, 2004

160. Brattbakk B, Fleming BC, Peura G, Abate JA, Johnson RJ, Beynnon BD, Nichols CE: Knee Laxity Following ACL Reconstruction with a bone-Patellar Tendon-Bone (BPTB) Autograft: A prospective Study using Roentgen Stereophotogrammetric Analysis (RSA). Presented at the American Orthopaedic Society for Sports Medicine meeting, Quebec City, Canada, June 24-27, 2004
161. Beynnon B: The Use of Taping and Bracing in Treatment of Ankle Injury. Presented at the ISAKOS-FIMS World Consensus Conference on Ankle Instability, Hong Kong, September 19-20, 2004
162. Coughlin KM, Dunleavy D, Tinsley A, Kaback L, Brattbakk B, Beynnon BD: Internal-External Torque-Rotation Response of the Knee In Vivo. Presented at the 51st Annual meeting of the Orthopaedic Research Society, Washington, DC, February 20-23, 2005
163. Beardsley CL, Peura GD, Brattbakk B, Beynnon BD: Challenges of Measuring Joint Translation with Roentgen Stereophotogrammetry. Presented at the 51st Annual meeting of the Orthopaedic Research Society, Washington, DC, February 20-23, 2005
164. Incavo SJ, Banks A, Banks S, Coughlin KM, Beynnon BD: Kneeling with a High Flex Insert After Total Knee Arthroplasty. Presented at the 51st Annual meeting of the Orthopaedic Research Society, Washington, DC, February 20-23, 2005
165. Paller DJ, Beynnon BD, Frenzen SW, Bartlett III CS, Beardsley CL: A Three-Dimensional Biomechanical Comparison of Intramedullary (IM) Nail Fixation of Distal Femoral Fractures in Osteoporotic Bone. Presented at the 51st Annual meeting of the Orthopaedic Research Society, Washington, DC, February 20-23, 2005
166. Roemhildt ML, Coughlin KM, Peura GD, Hallock S, Fleming BC, Beynnon BD: The Relationship Between Altered Load About the Tibiofemoral Joint and Articular Cartilage Properties. Presented at the 51st Annual meeting of the Orthopaedic Research Society, Washington, DC, February 20-23, 2005
167. Incavo SJ, Beynnon BD, Abate JA, Urse JS, Coughlin K: Medial Opening Wedge Tibial Osteotomy Utilizing a New Fixation System. Presented at the 5th Biennial ISAKOS Congress, Hollywood, FL, April 3-7, 2005
168. Beynnon BD, Johnson RJ, Brattbakk B, Abate JA, Fleming BC, Nichols CE, III: Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction with a Bone-Patellar Tendon-one Autograft. Presented at the 2nd International Symposium on Sports Injuries, Portoroz, Slovenia, May 20-21, 2005
169. Shultz SJ, Ambegaonkar JP, Botic TL, Kulas AS, Nguyen A, Shimokochi Y, Windley TC, Beynnon BD: Intratester and Intertester Reliability of Clinical Measures of Lower Extremity Anatomical Alignment. Presented at the 56th NATA Annual Meeting and Clinical Symposia, Indianapolis, IN, June 12-15, 2005
170. Shultz SJ, Shimokochi Y, Nguyen A, Ambegaonkar JP, Schmitz RJ, Beynnon BD, Perrin DH: Non-weight bearing anterior knee laxity is related to anterior tibial translation during transition from non-weight bearing to weight bearing. Presented at the 1st World Congress on Sports Injury Prevention, Oslo, Norway, June 23-25, 2005
171. Beynnon BD, Johnson RJ, Brattbakk B, Abate JA, Fleming BD, Nichols CE: Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction with a Bone-Patellar Tendon-Bone Autograft: A prospective, randomized, double-blind comparison of accelerated versus delayed programs. Winner of the 2005 AOSSM O'Donoghue Sports Injury Research Award. Presented at the AOSSM Annual Meeting, Keystone, CO, July 14-17, 2005
172. Tuttle H, Abate JA, Beynnon BD, Nichols CE: Continuous Subacromial Bupivacaine Infusion for Post-Operative Analgesia after Arthroscopic Shoulder Surgery: A prospective, randomized double-blinded study. Presented at the AOSSM Annual meeting, Keystone, CO, July 14-17, 2005

173. Kelleher PM, Shafritz AB, Paller DJ, Shackford S, Beynnon BD, Beardsley CL: Biomechanical Consequences of Total Claviclectomy. Presented at the 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, March 19-22, 2006
174. Shultz SJ, Shimokochi Y, Nguyen A-D, Schmitz RJ, Beynnon BD, Perrin DH: Greater Anterior Knee Laxity and General Joint Laxity Predict Greater Varus-Valgus and Rotation Knee Laxity. Presented at the 53rd Annual Meeting of the American College of Sport Medicine, Denver, CO, May 31-June 3, 2006
175. Shultz SJ, Shimokochi Y, Nguyen A, Schmitz RJ, Beynnon BD, Perrin DH: Females with Greater Anterior Knee Laxity Also Have Greater Varus-Valgus & Internal-External Rotation Knee Laxity. Presented at the NATA Annual Meeting, Atlanta, GA, June 14-18, 2006
176. Beynnon BD, Vacek PM, Abate JA, Murphy D, Paller D: A Prospective Study of Risk Factors for First Time Inversion Ankle Ligament Trauma. Winner of the 2006 NCAA Research Award. Presented at the AOSSM Annual meeting, Hershey, PA, June 29-July 2, 2006
177. Beynnon BD, Uh BS, Johnson RJ, Abate JA, Nichols CE, Fleming BC, Poole AR, Roos H: Rehabilitation After Anterior Cruciate Ligament Reconstruction: A prospective, randomized, double-blind comparison of programs administered over 2 different time intervals. Winner of the 2006 Hughston Award. Presented at the AOSSM Annual meeting, Hershey, PA, June 29-July 2, 2006
178. Slauterbeck JR, Kousa P, Clifton BC, Naud S, Tourville TW, Johnson RJ, Beynnon BD: Geographic Mapping of Meniscus and Cartilage Lesions Associated with ACL Injuries. Presented at the 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008
179. Roemhildt M, Naud S, Johnson R, Beynnon B: The Effect of Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction with a Bone-Patellar Tendon-Bone Autograft on Synovial Fluid Based Biochemical Markers of Articular Cartilage Metabolism. Presented at the 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008
180. Chandrashekar N, Hashemi J, Slauterbeck JR, Beynnon BD: Graft Pre-Tension Used in ACL Reconstruction: Should it be graft specific? An analysis based on low load properties of bone-patellar tendon-bone grafts. Presented at the 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008
181. Hashemi J, Chandrashekar N, Gill B, Beynnon BD, Slauterbeck JR, Schutt R, Dabezies E: The Tibial Plateau and its Influence on the Biomechanics of the Tibiofemoral Joint: A Sex-Based Comparison in a Blinded Study. Presented at the Research Retreat IV – ACL Injuries: The Gender Bias, Greensboro, NC, April 3-5, 2008. *J Athl Train* 43(5):556, 2008
182. Slauterbeck JR, Beynnon BD: Load Application to the Knee and Neuromuscular Control. Presented at the Symposia Session – ACL Injury Paradigm: ACL biology and its relationship to injury and prevention, at the 2nd World Congress on Sports Injury Prevention, Tromso, Norway, June 26-28, 2008
183. Johnson R, Beynnon BD: “ACL Injuries among Ski Racers in New England”; and “Risk Factors for ACL Injuries among Elite Alpine Skiers and Competitors”. Presented at the Symposia Session – The Prevention of Knee and Lower Leg Injuries among Elite Alpine Skiers and Competitors, at the 2nd World Congress on Sports Injury Prevention, Tromso, Norway, June 26-28, 2008
184. Drury T, Ames SE, Hall J, Beynnon B, Costi K, Benoit LD: Spondylolisthesis in Patients with Neurogenic Claudication affects Functional Performance and Self-Reported Quality of Life. Presented at the 15th Annual Meeting of IMAST (International Meeting of Advanced Spine Techniques, Scoliosis Research Society), Hong Kong, July 8-11, 2008

185. Spang JT, Dang A, Rincon L, Beynnon BD, Mazzocca AD, Arciero RA: The Effect of Meniscectomy and Meniscal Allograft Transplant on Strain Patterns in the Native ACL. Presented at the AOSSM Annual Meeting, Calgary, Canada, July 10-13, 2008
186. Roemhildt ML, Coughlin KM, Peura GD, Badger G, Beynnon, BD: Effect of Chronic, Altered-Loading of the Lapine Tibio-Femoral Joint on Synovial Fluid Based Biomarkers of Articular Cartilage Metabolism. Presented at the 2008 World Congress on Osteoarthritis, Rome, Italy, September 18-21, 2008
187. Hashemi J, Chandrashekar N, Gill B, Slaughterbeck JR, Schutt R, Dabezies ED, Beynnon BD: Shallow Medial Tibial Plateau and Steep Posterior Slope: New risk factors for anterior cruciate ligament injury. Presented at the 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22-25, 2009
188. Shultz SJ, Schmitz RJ, Nguyen A-D, Beynnon BD: Anatomical Predictors of Knee Rotation During the Transition from Non-weight Bearing to Weight Bearing. Presented at the 56th American College of Sports Medicine Annual Meeting, Seattle, Washington, May 27-30, 2009
189. Ames SE, Leib ES, Benoit LD, Beynnon BD, Hall JS: The Prevalence of Low Bone Density in Women with Symptomatic Lumbar Spinal Stenosis. Presented at the 16th International Meeting on Advanced Spine Techniques, Vienna, Austria, July, 15-18, 2009
190. Roemhildt ML, Fleming BC, Beynnon BD, Churchill D: In Vitro Validation of a Varus Loading Device in the Rabbit Knee. Presented at the 2009 World Congress on Osteoarthritis, Montreal, QC, September 10-13, 2009.
191. Roemhildt ML, Rowell C, Gardner-Morse M, Beynnon BD: Gait Alterations in Rats Following Application of an Altered Loading Device. Presented at the 2009 World Congress on Osteoarthritis. Montreal, QC, September 10-13, 2009.
192. Roemhildt ML, Rowell CR, Dragon J, Beynnon BD, Bond J: Analysis of Gene Expression in the Rat Lateral Collateral Ligament Following Increased Loading. Presented at the 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 6-9, 2010
193. Gardner-Morse MG, Tacy NJ, Beynnon BD, Roemhildt ML: In Situ Microindentation for Determining Local subchondral Bone compressive Modulus. Presented at the 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 6-9, 2010
194. Nelms NJ, Ames ES, Beynnon BD: Variation in Lumbar Vertebral Pedicle Structure with Bone Mineral Density. Presented at the 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 6-9, 2010
195. Roemhildt ML, Anderson K, Rowell C, Gardner-Morse M, Beynnon BD: Changes in the Cellularity of Articular Cartilage Following Chronic Altered Compressive Loading of the Rat Knee. Presented at the 2010 World Congress on Osteoarthritis, Brussels, Belgium, September 23-26, 2010
196. Roemhildt ML, Anderson K, Beynnon BD, Gardner-Morse M: Region Specific Cellularity of Articular Cartilage in the Tibial Plateau of the Mature Sprague-Dawley Rat. Presented at the 2010 World Congress on Osteoarthritis, Brussels, Belgium, September 23-26, 2010
197. Beynnon BD, Smith HC, Holterman L, Vacek PM, Davidson SL, Shultz SJ, Tourville TW, Slaughterbeck JR, Johnson RJ: A Prospective Evaluation of the Landing Error Scoring system (LESS) as a Screening Tool for Anterior Cruciate Ligament Injury Risk. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
198. Hashemi J, Breighner R, Mansouri H, Slaughterbeck JR, Beynnon BD: Odds-Ratio and Probability Estimation Based on Tibial Plateau Geometry for Subjects with Multiple ACL Injuries. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011

199. Hashemi J, Mansouri H, Chandrashekar N, Slauterbeck JR, Beynnon BD: Prediction of Structural Properties of the Anterior Cruciate Ligament using a Multiple Linear Regression Model. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
200. Shultz SJ, Schmitz RJ, Kong Y, Dudley WN, Beynnon BD, Nguyen AD, Kim HS, Montgomery MM: Cyclic Variations in Knee Joint Laxity Profiles Influence Landing Biomechanics. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
201. Tourville TW, Smith HC, Davidson SL, Shultz SJ, Holtermann L, Vacek PM, Slauterbeck JR, Burnstein IM, Johnson RJ, Beynnon BD: Design and Evaluation of a New Device to Measure Isometric Hip Muscle Strength. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
202. Tourville TW, Johnson RJ, Slauterbeck JR, Naud SJ, Beynnon BD: Initial changes in Joint Space Width Following ACL Injury and Reconstruction: A matched case-control study. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
203. Roemhildt MR, Rowell CM, Beynnon BD, Anderson K, Peterson C: Calcification of Articular Cartilage in the Knee of the Sprague-Dawley Rat. Presented at the 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13-16, 2011
204. Beynnon B, Smith HC, Scheinman A, Sturnick D, Vacek P, Holtermann L, Gardner-Morse M, Tourville T, Slauterbeck J, Bernstein I, Shultz S, Hashemi J, Johnson R: Geometry of the Articular Cartilage of the Tibial Plateau is Related to Anterior Cruciate Ligament Injury Risk. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
205. Tourville T, Johnson R, Naud S, Slauterbeck J, Beynnon B: Relationship between Arthroscopic Findings at the Time of ACL Reconstruction and Tibiofemoral Joint Space Width. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
206. Tourville T, Johnson R, Naud S, Slauterbeck J, Struglics A, Lohmander S, Beynnon B: Comparison of Synovial Fluid ARGS Concentrations at Baseline and One-Year Post-ACL Reconstruction Compared to Healthy, Matched Controls. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
207. Tourville T, Poynter M, Roemhildt M, Slauterbeck J, Johnson R, Beynnon B: Relationship Between Synovial Fluid Cytokines, MMP's & TIMP's and Joint Space Width Narrowing One Year Post-ACL Reconstruction. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
208. Tourville T, Johnson R, Naud S, Slauterbeck J, Beynnon B: Radiographic Measurement of Tibiofemoral Joint Space Width Following ACL Injury and Reconstruction. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
209. Tourville T, Poynter M, Roemhildt M, Slauterbeck J, Johnson R, Beynnon B: The Relationship Between Markers of Articular Cartilage Metabolism and Post-Traumatic Osteoarthritis Following ACL Reconstruction. Presented at the 2011 OARSI World Congress on Osteoarthritis, San Diego, CA, September 15-18, 2011
210. Tourville TW, Johnson RJ, Naud S, Slauterbeck JR, Roemhildt ML, Beynnon BD: Relationship Between Biomarkers of Type-II Collagen Metabolism and Kellgren & Lawrence Grade in Early PTOA. Presented at the OARSI OA Biomarkers Global Initiative Mini-Symposium, San Diego, CA, September 18, 2011
211. Tourville TW, Johnson RJ, Naud S, Slauterbeck JR, Beynnon BD: Relationship Between Arthroscopic Findings at the Time of ACL Reconstruction and Tibiofemoral Joint Space Width. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.

212. Tourville TW, Johnson RJ, Naud S, Slauterbeck JR, Roemhildt ML, Beynnon BD. Markers of Type-II Collagen Metabolism and Kellgren & Lawrence Grade in Early Post Traumatic Osteoarthritis. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
213. Scheinman A, Beynnon B, Smith HC, Sturnick D, Vacek P, Holtermann L, Gardner-Morse M, Tourville T, Slauterbeck J, Bernstein I, Shultz S, Hashemi J, Johnson R. The Geometry of the Articular Cartilage of the Tibial Plateau and Anterior Cruciate Ligament Injury Risk. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
214. Smith H, Beynnon B, Goetschius J, Holtermann L, Vacek P, Shultz S, Tourville T, Bernstein I, Slauterbeck J, Johnson R. Application of a Clinic-Based Algorithm as a Tool to Identify Female Athletes at Risk for Anterior Cruciate Ligament Injury. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
215. Beynnon BD, Sturnick DR, Dubief Y, Smith HC, Scheinman A, Vacek P, Holtermann L, Gardner-Morse M, Tourville T, Slauterbeck J, Bernstein I, Shultz S, Hashemi J, Johnson R. Knee Joint Geometry Characterization: Local Curvature in Relationship with ACL Injury Risk. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
216. Carter JC, Sturnick DR, Smith HC, Scheinman A, Gardner-Morse M, Slauterbeck JR, Johnson RJ, Beynnon BD. Relation of Knee Extensor Moment Arm and Patellar Tendon Angles to Anterior Cruciate Ligament Injury Risk in Females. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
217. Roemhildt MR, Gardner-Morse M, Beynnon BD, Anderson KA. Load-Induced Alteration of Bone and Cartilage Properties in the Rat Tibia Plateau. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
218. Roemhildt MR, Pause D, Anderson KA, Gardner-Morse M, Beynnon BD, Dragon J. Alteration of In Vivo Chondrocyte Gene Expression by Increased Chronic Loading in the Rat. Presented at the 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 3-7, 2012.
219. Beynnon BD, Sturnick DR, et al. Geometry of the Articular Cartilage of the Tibial Plateau is Related to Anterior Cruciate Ligament Injury Risk. Osteoarthritis Research Society International World Congress, San Diego, CA, 2012.
220. Roemhildt M, Gauthier A, Beynnon B, Ertem F, Gardner-Morse M, Badger G. Chronic In Vivo Varus Loading Induces Degenerative Changes in the Rat Tibiofemoral Joint. Presented at the 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.
221. Daines SB, Aronsson DD, Sturnick D, Beynnon BD, Lisle J, Naud S, Gardner-Morse M. What is the Best Material for Molding Casts in Children? Presented at the 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.
222. Hashemi J, Bhuyian A, Mansouri H, Slauterbeck J, Beynnon B. ACL-Injured Subjects Have a Smaller Tibial Spine than Uninjured Controls and Females Have a Smaller Tibial Spine than Males. Presented at the 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.
223. Whitney D, Sturnick DR, Smith HC, Vacek P, Holtermann LA, Quinttus S, Foot N, Slauterbeck J, Shultz S, Hashemi J, Johnson R, Beynnon BD. Femoral intercondylar notch geometry and anterior cruciate ligament size in association with risk of ACL injury: a multivariate model. Presented at the 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

224. Slauterbeck J, Sturnick D, Whitney D, Smith H, Vacek P, Holterman L, Johnson R, Hashemi J, Shultz S, Beynnon B. Femoral Intercondylar Notch Geometry and Anterior Cruciate Ligament Size in Association with Risk of ACL Injury: A Multivariate Model. Presented at 9th Biennial ISAKOS Meeting, May, 2013.
225. Argentieri EC, Sturnick DR, DeSarno MJ, Gardner-Morse MG, Slauterbeck JR, Johnson RJ, Beynnon BD. Changes to the Tibial Plateau Articular Cartilage Thickness Profile After an Anterior Cruciate Ligament Injury. Presented at the 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.
226. Sturnick DR, Van Gorder R, Vacek P, DeSarno M, Gardner-Morse M, Tourville T, Slauterbeck J, Johnson R, Shultz S, Beynnon B. The Risk of Suffering Non-Contact Anterior Cruciate Ligament is Related to Geometry of the Meniscus and Articular Cartilage. Presented at the 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.
227. Levins J, Sturnick DR, Vacek P, Slauterbeck J, Gardner-Morse M, Tourville T, DeSarno M, Johnson R, Beynnon B. Anatomical Risk Factors Associated with Recurrent ACL Injury Risk: A Case-Control Study. Presented at the 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.
228. Birch CE, DeSarno M, Gardner-Morse MG, Slauterbeck J, Johnson RJ, Tourville T, Beynnon B. Subchondral Trabecular Bone Morphology Changes Following ACL Injury: A Matched Case-Control Study. Presented at the 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.
229. Beynnon BD, Birch CE, Mensch KS, DeSarno MJ, Gardner-Morse MG, Slauterbeck JR, Johnson RJ, Tourville TW. Subchondral Trabecular Bone Morphology Changes Following ACL Injury: A Matched Case-Control Study. Presented at the 2014 OARSI World Congress on Osteoarthritis, Paris, France, April 24-27, 2014.
230. Wasilko SM, Tourville TW, DeSarno MJ, Slauterbeck JR, Johnson RJ, Struglics A, Beynnon BD. Relationship Between Concomitant Injuries Sustained During ACL Rupture and Biological Markers of Articular Cartilage Metabolism. Presented at the 2014 OARSI World Congress on Osteoarthritis, Paris, France, April 24-27, 2014.
231. Argentieri EC, Gardner-Morse MG, Sturnick DR, DeSarno MJ, Slauterbeck JR, Tourville TW, Johnson RJ, Beynnon BD. Differences in Cartilage Thickness Profile of the Medial Tibial Plateau After Anterior Cruciate Ligament Injury. Presented at the 2014 OARSI World Congress on Osteoarthritis, Paris, France, April 24-27, 2014.
232. Sturnick DR, Gardner-Morse MG, Argentieri EC, DeSarno MJ, Slauterbeck JR, Tourville TW, Johnson RJ, Beynnon BD. Changes to the Tibial Plateau Articular Cartilage and Meniscus Geometry After an Anterior Cruciate Ligament Injury. Presented at the 2014 OARSI World Congress on Osteoarthritis, Paris, France, April 24-27, 2014.
233. Argentieri EC, Sturnick DR, Beynnon BD, et al. Within Subject Changes To Tibial Articular Cartilage Thickness 4-5 Years Post ACL-injury. Orthopaedic Research Society Annual Meeting. Las Vegas, N. 2015
234. Kelley JA, Argentieri EC, Beynnon BD, et al. Evaluation of a Multivariate Risk Model for ACL Injury. Orthopaedic Research Society Annual Meeting. Las Vegas, NV. 2015
235. Argentieri EC, Sturnick DR, Beynnon BD, et al. Within Subject Tibial and Femoral Cartilage Thickness Differences 4 Years Post ACL-Injury. Osteoarthritis Research Society International World Congress. Seattle, WA. 2015
236. Levins JG, Argentieri EC, Sturnick DR, Beynnon BD, et al. Geometric Risk Factors for Noncontact Contralateral ACL Injury in Young Female Athletes” Orthopaedic Research Society Annual Meeting., Lake Buena Vista, FL. 2016.

237. Gardner-Morse M, Argentieri EC, Sturnick DR, Beynnon BD, et al. Differences in Tibial Cartilage and Subchondral Bone Surface Mean Curvature Between ACL-Injured and Uninjured Knees, 4 Years Post Injury and Reconstruction”, Orthopaedic Research Society Annual Meeting. Lake Buena Vista, FL. 2016
238. Argentieri EC, Sturnick DR, Beynnon BD, et al. Within Subject Differences In Femoral Cartilage Thickness Four Years Post ACL-injury and reconstruction, Orthopaedic Research Society Annual Meeting. Lake Buena Vista, FL. 2016.
239. Gardner-Morse M, Argentieri EC, DeSarno M, Tourville T, Slauterbeck J, Beynnon B. Tibial Cartilage and Subchondral Bone Surface Mean Curvature Differences between Anterior Cruciate Ligament Injured and Uninjured Knees Four Years Post Injury and Reconstruction. Poster presented at the 62nd Annual Meeting of the Orthopaedic Research Society, Orlando, FL, March 5-8, 2016.
240. Nelms NJ, Birch C, Halsey DH, Blankstein M, McGinnis RS, Beynnon BD. Assessment of early gait recovery after anterior approach compared to posterior approach total hip arthroplasty: A smartphone accelerometer study. American Academy of Hip and Knee Surgeons. 2019.
241. Razu S, Zhu A, Berube E, Fraychineaud T, Zayyad Z, Sturnick D, Beynnon B, Imhauser C. Poster presentation. Computational Knee Models Predict Increased ACL Force in Female and Male Subjects Suffering Non-contact ACL Rupture Compared to Age, Sex, and Sport-matched Controls. Annual Meeting of the Orthopaedic Research Society; 2020; Phoenix, AZ.
242. Razu S, Jahandar H, Fraychineaud T, Zayyad Z, Zhu A, Berube E, Sturnick D, Beynnon B, Imhauser C. Model-based predictions of ACL force in populations at increased risk of noncontact ACL rupture: Cadaveric evaluation. Poster Presentation at the Annual Meeting of the ORS, 2021.
243. Razu S, Sturnick D, Santner T, Beynnon B, Imhauser C. Integrating clinical data and computational modeling to quantify knee mechanics in athletes at increased risk of noncontact ACL rupture. Presentation at the 17th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), 2021.
244. Zeitlin J, Fontana M, Sturnick D, Vacek P, Nawabi D, Wickiewicz T, Pearle A, Beynnon B, Imhauser C. Noncontact ACL Injury Risk Prediction with Machine Learning. Poster Presentation at the Annual Meeting of the ORS, 2022.
245. Wheatley M, Jain A, Razu S, Berube E, Manzi J, Zhu A, Wickiewicz T, Nawabi D, Pearle A, Santner T, Beynnon B, Imhauser C. Predictions of anterior cruciate ligament force are more sensitive to knee valgus moments in athletes at increased risk of suffering noncontact injury: A matched case-control design. Podium Presentation at the 9th World Congress of Biomechanics, 2022.
246. Wheatley M, Pearle AD, Nawabi DH, Wickiewicz TL, Beynnon BD, Imhauser CW. Tibiofemoral geometry is related to ACL force under valgus loading in young female athletes with and without injury. Podium Presentation at the Annual Meeting of the Orthopaedic Research Society (ORS), 2023.
247. Wheatley M, Pearle AD, Nawabi DH, Wickiewicz TL, Beynnon BD, Imhauser CW. Unique Tibiofemoral Geometric Features Affect Simulated Knee Mechanics in Young Female Athletes. Podium Presentation at the 18th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering; 2023; Paris.
248. Wheatley M, Nawabi DH, Wickiewicz TL, Beynnon BD, Imhauser CW, Pearle AD. Tibiofemoral Geometry is Related to ACL Force with Valgus Loading in Young, Female Athletes. Podium Presentation at the 14th Biennial ISAKOS Congress, 2023.
249. Zeitlin J, Fontana MA, Parides M, Nawabi DH, Wickiewicz TL, Pearle AD, Beynnon BD, Imhauser CW. No Single Dominant Risk Factor for Noncontact ACL Injury: Key Thresholds and Relative Contributions of Knee Geometry and Anterior-Posterior Laxity. ePoster Presentation at the 14th Biennial ISAKOS Congress, 2023.

250. Wheatley M, Nawabi DH, Wickiewicz TL, Beynnon BD, Imhauser CW, Pearle AD. Tibiofemoral Geometry is Related to ACL Force with Valgus Loading in Young, Female Athletes. Podium Presentation at the Biennial Meeting of the ACL Study Group, 2023.
251. Imhauser CW, Razu SS, Jain A, Sturnick DR, Santner TJ, Beynnon BD, Nawabi DH, Pearle AD, Wickiewicz TL. Impact of Ligament Properties on ACL Force in Athletes at Increased Risk of Noncontact ACL Injury. Podium Presentation at the Biennial Meeting of the ACL Study Group, 2023.

KEYNOTE PRESENTATIONS/INVITED LECTURES

1. “Biomechanics of the ACL in vivo”, “Biomechanics of total knee replacement”, and “A prospective, randomized investigation of ACL reconstruction: Comparison of the B-PT-B and semitendinosus-gracilis autografts”. Invited speaker at the 2nd Basel International Knee Congress and Instructional Course, Basel, Switzerland, September 25-28, 1996
2. “Biomechanical behavior of knee ligaments in-vivo”. Keynote Lecturer, American Society of Biomechanics, Atlanta, GA, October 17-19, 1996
3. “In vivo knee and ligament biomechanics to consider after surgery: ADL, Rehabilitation, Sports” and “Rehabilitation biomechanics: Loading considerations, open vs. closed chain”. Invited speaker at the AAOS CME Course: Shoulder, Elbow and Knee: The Athlete’s Perspective to Treatment, Controversies and Problem Solving, Marco Island, FL, February 5-8, 1998
4. “The biomechanical behavior of the anterior cruciate ligament and bone-patellar tendon-bone graft in-vivo”, and “A prospective study of ankle injury risk factors”. Invited keynote speaker at the Swedish Society for Sports Medicine meeting, Lund, Sweden, April 21-26, 1998
5. “Proprioception after knee injuries-Clinical implications”, “A prospective, randomized, double blinded investigation of rehabilitation following ACL reconstruction”, “A comparison of an accelerated and a conservative program”, “Compliance to rehabilitation programs-How do we measure what patients really do during the rehabilitation program?”, and “Proprioception after ankle injuries-Clinical implications”. Invited keynote speaker at the University of Oslo, Oslo, Norway, June 5-8, 1998
6. “The application of biomechanics to the study of the anterior cruciate ligament in-vivo”, “Biomechanics of knee ligament replacements”, “Patellofemoral contact loads”, “Muscle reaction and joint motion in response to inversion moments for normal and chronically unstable ankles”. Invited speaker at the Third World Congress of Biomechanics, Sapporo, Japan, August 2-8, 1998
7. “The Biomechanics of Functional Knee Braces”. Presented at the 1998 German Orthopaedic Congress, October 15-18, 1998
8. “Biomechanics of the ACL and Healing ACL Graft”. Invited speaker at Brown University School of Medicine, Providence, RI, May 25-26, 1999
9. “Biomechanics of Functional Knee Bracing”. Presented at the National Athletic Trainers Association Meeting, Kansas City, KS, June 16-19, 1999
10. “Sports Medicine Research: How to do a clinical study”. Presented at the 25th Annual American Orthopaedic Society for Sports Medicine meeting, Traverse City, MI, June 19-22, 1999
11. “Biomechanics of Knee Braces”. Invited speaker for Orthopaedics Grand Rounds at Penn State College of Medicine, Hershey, PA, July 12-13, 1999

12. "In-vivo vs In-vitro Measurements in Biomechanics"; "A Prospective, Randomized Double Blind Study of Accelerated Versus Non-Accelerated Rehabilitation after ACL-Reconstruction with a B-PT-B Graft"; "How do we Measure Proprioception of the Knee?"; "Measurement of Shoulder Kinematics In-Vivo"; "What Should we Require from a Sports Brace?"; and "Does Weight Bearing Change the Effect of a Functional Knee Brace?" Invited Lecturer at the 3rd International Course Sports Rehabilitation and Biomechanics, Perugia, Italy, December 2-4, 1999
13. "Prospective, Randomized, Double-blind Study of Rehabilitation Following Anterior Cruciate Ligament Reconstruction". Invited speaker for the Joint Diseases Laboratory Seminar at Shriners Hospitals for Children, Montreal, Quebec, April 4, 2000
14. "Knee Rehabilitation Following ACL Reconstruction"; "Functional Knee Braces: ACL implications". Invited speaker for the HealthSouth/dj Orthopaedics ACL Update 2001 meeting, Carlsbad, CA, February 3-4, 2001
15. "A Prospective, Randomized, Doubled-Blind Investigation of Rehabilitation Following ACL Disruption and Reconstruction with a Bone-Patellar Tendon-Bone Graft". Invited speaker at the Department of Orthopaedics, University Hospital, Lund, Sweden, May 28, 2001
16. "How to Plan Clinical Research"; "From Research Question and Hypothesis to Producing a Successful Manuscript – How I do it". Invited speaker at the Sports Medicine Research Program at Karolinska Institute, Stockholm, Sweden, May 29-30, 2001
17. "The Biomechanical Behavior of the Anterior Cruciate Ligament In-Vivo: Application to the healing anterior cruciate ligament graft". Invited speaker at the Swedish Orthopaedic Society Annual meeting, Norrköping, Sweden, May 31, 2001
18. "Update on ACL Risk Factors and Prevention in the Female Athlete: Update on ACL injury risk factor assessment"; "Training and Rehabilitation Considerations of Open vs. Closed Chain Exercises in the Lower Extremity: Biomechanical implications for the healing knee". Invited speaker at the NATA Annual meeting, Los Angeles, CA, June 19-22, 2001
19. "Knee and Ankle Injuries: Why do they occur?". Invited speaker at the Oslo Sports Trauma Research Center, Department of Sport and Physical Education, Oslo, Norway, October 30-November 1, 2001
20. "Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction"; and "Biomechanical Role of Braces for Knee Function and Disorders". Invited speaker at the 27th Annual Japanese Knee Society meeting, Beppu, Oita, Japan, February 22-23, 2002
21. "Sports Medicine Principals Concerning Observational Studies and Clinical Trials". Invited speaker at the ACL Study Group meeting, Big Sky, MT, March 2-8, 2002
22. "Sports Medicine Research: Principles Concerning Observational Studies and Clinical Trials". Invited lecturer for Instructional Course at the AOSSM 28th Annual meeting, Orlando, FL, July 1, 2002
23. "Reconstruction and Rehabilitation of Anterior Cruciate Ligament Injuries: Basic science and epidemiologic basis for treatment and rehabilitation techniques". Invited speaker for the West Point Orthopaedic Group, West Point, NY, September 20, 2002
24. "ACL Research in Vermont: Recent Advances". Invited speaker at the Danish Society for Arthroscopicsurgery and Sportstrauma, Århus, Denmark, November 21, 2002
25. "Reducing the risk of Injury by Protective Measures in Personal Equipment and the Sports Environment", and "Experiences with Injury-Preventive Studies in Down-Hill Skiing". Invited speaker at the 6th Scandinavian Congress on Medicine and Science in Sports, Århus, Denmark, November 21-24, 2002

26. "The Biomechanics of the Anterior Cruciate Ligament In-Vivo". Invited speaker at the 3rd International Knee Congress and Instructional Course, Basel, Switzerland, January 27-29, 2003
27. "Clinical Studies of the Healing ACL Graft and Knee". Invited lecturer for the ACL Workshop at the 49th Annual meeting of the Orthopaedic Research Society, New Orleans, LA, February 2, 2003
28. "Risk Factors for Knee Ligament Trauma". Invited speaker at the Research Retreat II on ACL Injuries: The Gender Bias, Lexington, KY, April 4-5, 2003
29. "Reconstruction and Rehabilitation of the Anterior Cruciate Ligament". Invited speaker for Orthopaedics Grand Rounds at Rhode Island Hospital, Providence, RI, May 7, 2003
30. "What Do We Know About Risk Factors For Injury". Invited speaker for the Symposium on Sports Injury Prevention in the New Millenium: An evidence based approach. American College of Sports Medicine 50th Annual meeting, San Francisco, CA, May 28-31, 2003
31. "Clinical Research Design: Observational Studies and Clinical Trials"; "Biomechanical Role of Braces for Knee Function and Disorders"; Reconstruction and Rehabilitation of the Injured Anterior Cruciate Ligament"; and Risk factors for Knee and Ankle Ligament Trauma". Invited speaker for the Orthopaedics Grand Rounds at Texas Tech University Medical Center, Lubbock, TX, December 11-13, 2003
32. "Knee and Anterior Cruciate Ligament Injury: Epidemiology, Risk Factors, Reconstruction, and Rehabilitation". Invited speaker for Orthopaedics Grand Rounds at the University of North Carolina, Greensboro, NC, February 6, 2004
33. "ACL Biomechanics". Invited speaker for the Symposium on Reconstruction and Rehabilitation of the ACL. American College of Sports Medicine 51st Annual meeting, Indianapolis, IN, June 2-5, 2004
34. "How to Design and Develop Clinical Research". Invited lecturer for the Research Workshop at the AOSSM Annual meeting, Quebec City, Canada, June 23, 2004
35. "Integrated Research ACL: Healing Following Injury, Reconstruction, and Rehabilitation"; and "Current Concepts in Prevention of ACL Injuries". Invited lecturer for the Instructional Course at the AOSSM Annual meeting, Quebec City, Canada, June 24-27, 2004
36. "The Biomechanics Associated with Knee Ligament Injury: The effects of bracing"; and "The Biomechanics Associated with Knee Ligament Injury: Forces needed to produce injury". Invited speaker at the AOSSM Hunt Valley Meeting, Atlanta, GA, January 13, 2005
37. "Rehabilitation after ACL Injury and Reconstruction". Invited speaker at the Harvard Orthopaedic Grand Rounds, Harvard Medical School, Boston, MA, March 16, 2005
38. "Non-Contact ACL Injury Revisited: Mechanisms, Preventative Strategies and Outcomes". Invited symposium speaker for the ISAKOS 5th Biennial Congress, Hollywood, FL, April 3-7, 2005
39. "Application of Biomechanical Knowledge in Knee Ligament Injury". Invited Instructional Course lecturer for the ISAKOS 5th Biennial Congress, Hollywood, FL, April 3-7, 2005
40. "Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction with a Bone-Patellar Tendon-Bone Autograft". Foundation Distinguished Scholar Presentation by the American Orthopaedic Society for Sports Medicine presented at the NATA 56th Annual Meeting and Clinical Symposia, Indianapolis, IN, June 12-15, 2005

41. "Abnormal Loading and Osteoarthritis Progression". Invited speaker for the Symposia Session – Osteoarthritis: Etiology and Prevention, at the NATA 56th Annual Meeting and Clinical Symposia, Indianapolis, IN, June 12-15, 2005
42. "A Reviewer's Perspective". Invited speaker for the Researcher's Forum – Playing the Funding Game: Subsidizing your athletic training research, at the NATA 56th Annual Meeting and Clinical Symposia, Indianapolis, IN, June 12-15, 2005
43. "Risk Factors for Ankle Injuries"; "Review of Knee Ligament Injury Risk Factors Studies"; and "Risk Factors for Knee Ligament Injuries in Alpine Skiers". Invited symposium speaker at the 1st World Congress on Sports Injury Prevention, Oslo, Norway, June 23-25, 2005
44. "How to Design and Develop Clinical Research"; and "Basic Science: Knee Biomechanics". Invited lecturer for the Pre-conference Workshops at the AOSSM Annual Meeting, Keystone, CO, July 13, 2005
45. "Reconstruction and Rehabilitation of Anterior Cruciate Ligament Injuries". Invited speaker for Orthopedic Grand Rounds at the University of Massachusetts, April 19, 2006
46. "Risk Factors for ACL Injury". Invited lecturer for the Pre-conference Workshops at the AOSSM Annual Meeting, Hershey, PA, June 28, 2006
47. "Research of Sports Injury". Invited lecturer for the PACA Nursing Conference at Fletcher Allen Health Care, Burlington, VT, January 13, 2007
48. "Rehabilitation of the Knee Following Ligament Reconstruction". Invited speaker for the Orthopaedic Grand Rounds at the University of California at Los Angeles, February 7, 2007
49. "Kneeling after total knee arthroplasty". Invited speaker at the University of California at Davis, February 8, 2007
50. "Cartilage Biomechanics". Invited speaker at the University of California at San Diego, February 9, 2007
51. "Risk Factors for Anterior Cruciate Ligament Trauma"; and "Rehabilitation for the Knee Following Anterior Cruciate Ligament Reconstruction". Invited speaker at the University of Florida, March 8, 2007
52. "Treatment and Prevention of Ankle Ligament Injuries"; "Pitfalls of Implementing an Injury Prevention Program: Experience in alpine skiing"; and "The Athlete Exposed to Repetitive Landing and Pivoting: Identifying the knowledge gaps". Invited speaker for the Symposium on Injury Prevention in Exercise and Sports, at the University of Michigan, April 26-27, 2007
53. "How to Plan Clinical Science in Sports". Invited speaker at the 6th Biennial ISAKOS Congress, Florence, Italy, May 27-31, 2007
54. "Using Imaging Technology in Knee Trauma Research". Invited speaker at the Community Rounds Internship Program, University of Vermont College of Medicine, November 14, 2007
55. "The Effect of Gender on Musculoskeletal Injuries". Invited speaker for the Obstetrics and Gynecology Grand Rounds at the University of Vermont, January 10, 2008
56. "Rehabilitation of the Knee Following Anterior Cruciate Ligament Reconstruction". Invited speaker for the Mary and Butch Slaughter Lecture, University of Virginia, Department of Human Services, April 16, 2008
57. "Onset and Progression of Post-Traumatic Osteoarthritis Following ACL Injury and Reconstruction" and "Risk Factors for ACL Injury: What's Really Known?" Invited speaker for the Northern New England Athletic Training Conference, Fairlee, VT, June 10-11, 2011

58. "Rehabilitation of the knee following anterior cruciate ligament reconstruction". Invited speaker for the American Orthopaedic Society for Sports Medicine Annual Meeting, San Diego, CA, July 7-10, 2011
59. "Anterior cruciate ligament trauma has lasting effects on knee joint health", and Basic science seminar focused on prognostic studies of risk factors for lower extremity trauma. Invited speaker for Mayo Clinic, October 2015
60. "Sex-specific multivariate risk factor models for non-contact ACL injury. Invited speaker for University of North Carolina at Greensboro. March 2015.
61. "The effect of anterior cruciate ligament trauma on the knee and articular cartilage," Invited speaker for Hospital for Special Surgery, NY NY, May, 2016
62. "Anterior cruciate ligament trauma has lasting effects on knee joint health". Invited speaker for University of Florida, March 2016.
63. The effect of severe ligament trauma on the biomechanics of the knee and articular cartilage", and "Anterior cruciate ligament biomechanics". Invited speaker for the University of Basel, Switzerland. May, 2017
64. "The effect of anterior cruciate ligament trauma and reconstruction on biomechanics of the knee and articular cartilage," and the effect of anterior cruciate ligament trauma on the knee. Invited speaker for University of North Carolina at Chapel Hill
65. "Biomechanics of Osteoarthritis." Invited speaker for American Society of Bone and Mineral Research. Montreal Canada, September 2018
66. The epidemiology and risk factors for anterior cruciate ligament trauma in Vermont High School and College athletes. Invited speaker for Northern New England Athletic Trainers Conference, June 2019

STUDENTS & FELLOWS ADVISED (PAST & PRESENT):

Daniel Gottlieb (Advisor and Thesis committee member for Bioengineering M.S. and Biostatistics, M.S., 1988-1994)
- An Evaluation of Joint Position Sense Measurements: Accuracy, Repeatability and Clinical Potential

John Pyne (post-doctoral M.D., four-month Orthopaedic Resident Rotation, 1990-1991) - Hamstring Graft Fixation in Anterior Cruciate Ligament Reconstruction

Ann Erickson (graduate student in Bioengineering, M.S., 1991) - A Dynamic Evaluation of Prophylactic Knee Braces

Judith Baumhauer (post-doctoral M.D., four-month Orthopaedic Resident Rotation, 1991-1992) - A Prospective Study of Ankle Injury Risk Factors

Lars-Gunnar Elmqvist (post-doctoral M.D. Research Fellow, 1991-1992) – Measurement of Knee Joint Proprioception in Subjects That Have Suffered Knee Ligament Trauma

Pekka Kannus (post-doctoral M.D. Research Fellow, 1991-1992) - A Prospective, Randomized Investigation of Anterior Cruciate Ligament Reconstruction: A Comparison of the Bone-Patellar Tendon-bone and Semitendinosus-Gracilis Autograft

David Muller (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1991-1992) - Strain Analysis of the Ulnar Collateral Ligament of the Thumb Metacarpophalangeal Joint

Eric Rudd (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1991-1992) - Altered Achilles Tendon Biomechanics in Hyperpronation

Braden Fleming (graduate student in Mechanical Engineering, 1991-1996, Ph.D.) - The In-Vivo Strain Behavior of the Anterior Cruciate Ligament During Stationary Bicycling: An Experimental and Analytical Investigation

Charlotte Hickcox (graduate student in Bioengineering, M.S., 1992) – Design Manufacture and Verification of an ankle Laxity Testing Device for In-Vivo Use

Charles Stankewich (graduate student in Bioengineering, M.S., 1992) - The Biomechanics of the Anterior Cruciate Ligament During Squatting Exercises In-Vivo

Marco Dirks (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1992-1993) - Evaluation of Knee Joint Position Sense Measurement Techniques

Christopher Meriam (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1992-1993) - Effect of Screw Insertion Torque on Tendons Fixed with Spiked Washers

John Samani (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1992-1993) - Reconstruction of the Acutely Ruptured Anterior Cruciate Ligament

Ulf Eklund (post-doctoral M.D., 1993) - Evaluation of Mechanical and Functional Ankle Instability

Lars Good (post-doctoral M.D. Research Fellow, 1993-1994) - Fatigue Evaluation of Soft Tissue Graft Fixation, In-Vivo ACL Strain Studies, and In-Vivo Application of the Arthroscopic Force Probe to ACL Grafts

Mark Deibert (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1993-1994) - Skiing Injuries in Children and Adults

Scott Lynch (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1993-1994) - EMG Latency Changes in Peroneus Longus, Peroneus Brevis, and Tibialis Anterior during Inversion Perturbation of the Ankle

Robert Sandmeier (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1993-1994) - Angulation of the Distal Radioulnar Joint: A Radiographic Study

John Novotny (graduate student in Mechanical Engineering, 1993-1996, Ph.D.) - Mathematical Modeling of the Glenohumeral Joint

Kristen Westmoreland (medical student, Summer 1994) - The Effects of Functional Knee Bracing on closed Loop Efferent Response in Anterior Cruciate Ligament-Deficient Subjects

David Beard (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1994-1995) - Ulnar Collateral Ligament Injuries of the Thumb: The Use of Arthrography; Biceps Tendon Distal Avulsion Injury with Operative Repair and Follow-up of Six Patients; Femur Fractures Associated with Loose Cemented Femoral Prosthesis

David Churchill (NIH post-doctoral Fellow Ph.D., 1994-1995) - Total Knee Arthroplasty Research

Bryan Huber (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1994-1995) - Muscle Reaction and Joint Motion Changes During Inversion Perturbation of Normal and Chronically Unstable Ankles

John Macy (NIH post-doctoral Fellow M.D., 1994-1995) - Three-Dimensional Analysis of Neck Motion in Different Cervical Orthoses

James Reid (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1994-1995) - Joint Position Sense in Total Knee Arthroplasty: Comparison of Posterior Stabilized-VS-PCL Retained Component Designs

Ewa Roos (pre-doctoral, Physical Therapy, 1994-1995) - Development and Validation of the Knee Osteoarthritis Outcome Score

Harald Roos (post-doctoral M.D. Research Fellow, 1994-1995) - Biomechanics and Biochemistry of Articular Cartilage Following ACL and Meniscus Injury

Eric Holmgren (undergraduate student, Ortho 292, Spring 1995)

Glenn Peura (graduate student, Ortho 292, Spring 1995)

Jennifer Webster (graduate student, Ortho 292, Spring 1995)

Herb Stevenson (medical student, Summer 1995) - Ski Injury Epidemiology

Gavin Webb (medical student, Summer 1995) - A Radiographic Study of Ankle Laxity: Development of the Best Technique to Evaluate the Anterior Drawer and Talar Tilt

Helen Harris (graduate student, Bsci 197, Fall 1995) -Development of Eccentric and Concentric Normative Strength Values for the Ankle

David Fehnel (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1995-1996) - Single Screw Fixation for Slipped Capital Femoral Epiphysis: Biomechanical Analysis of Cannulated Screws of Varying Outer Diameter

Benjamin Levine (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1995-1996) - A Prospective Randomized Study of Intramuscular Ketamine Versus Intravenous Sedation with Morphine and Midazolam in the Ambulatory Setting for Pediatric Orthopaedic Patients

James Schwender (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1995-1996) - A Method for Quantifying Glenohumeral Joint Laxity In-Vivo

Benjamin Uh (NIH post-doctoral Fellow M.D., 1995-1997) - In-Vivo Measurement of the Reconstructed Anterior Cruciate Ligament and A Prospective Study of Acute Ankle Ligament Sprains; A Prospective, Randomized, Double Blind Study of Rehabilitation Following ACL Reconstruction

Lars Konradson (post-doctoral M.D. Research Fellow, 1996) - Ankle Muscle Reaction in Response to Inversion Perturbation and Ankle Stability

Marci Jones (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1996-1997) - Measurement of Disc and Vertebral Wedging in Adolescent Idiopathic Scoliosis and Neuromuscular Scoliosis Associated with Cerebral Palsy

Stephen Lemos (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1996-1997) - The Stratification of Osteonecrosis in Cortical Bone Following Elevated Intramedullary Pressure

Todd Woolley (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1996-1997) - A Technique to Quantify the Internal-External Rotation Kinematics of the Human Glenohumeral Joint In Vivo

May-Arna Risberg (pre-doctoral Physical Therapy, nine-month Research Fellowship, 1997) - The Accuracy and Reliability of the Vermont Knee Laxity Device; Proprioception after Anterior Cruciate Ligament Reconstruction with and without Functional Knee Bracing; A New Device to Measure Knee Laxity During Weightbearing and Non-Weightbearing Conditions

Steve Ryder (pre-doctoral M.D., nine-month Research Fellowship, 1997) - The effect of anterior cruciate ligament trauma and bracing on knee proprioception

Howard Barker (post-doctoral M.D., one-year Research Rotation, 1997-1998) - A Prospective Study of Acute and Chronic Ankle Ligament Sprains

John Macy (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1997-1998 - Study of Shoulder Anatomy, and Injury Risk Factors in Competitive Alpine Ski Racers

Robert Church (Thesis Committee Member, M.S. Mechanical Engineering, 1988) – Acceleration Profiles for Quantification of Lifting Technique

Thomas Dahl (Thesis Committee Member, M.S. Biomedical Engineering, 1998) – Predicting and Reducing Sagittal Plane Forces on the Knee During Alpine Skiing

Ryan Labovitch (pre-doctoral M.D., June-December, 1998) – Study of the Effect of Knee Braces on the ACL-Deficient Knee During Weightbearing and Non-Weightbearing Postures

Julie Martin (Thesis Committee Member, M.S. Biomedical Engineering, 1998) – The Mechanical and Viscoelastic Behavior of the Rabbit Medial Collateral Ligament

Benjamin Uh (post-doctoral M.D., M.S. in Bioengineering, 1998) – Development and Evaluation of a New Device to Measure Knee Laxity During Weightbearing and Non-Weightbearing Conditions

Elise Ames (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1998-1999) – Inter and Intraobserver Reliability in Cement Mantle Grading of Primary Total Hip Arthroplasty

Darnell Blackmon (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1998-1999) - The Use of MR Arthrography to Diagnose Superior Labral Tears Compared with MR Imaging and Clinical Examinations

Jonathan Uroskie (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1998-1999) - Curing Properties of Bone Cement

Daniel Brown (graduate student in Bioengineering, M.S., 1999) - The Biomechanics of Functional Knee Bracing on Subjects with Anterior Cruciate Ligament Deficient Knees During Non-Weightbearing and Weightbearing conditions

Hutch Huddleston (Medical Student Research Rotation, 1999) - Fixation of Bone-Patellar Tendon-Bone Grafts with PLA Interference Screws

Brad Parsons (Medical Student Research Rotation, 1999) - The Effects of Weightbearing on Knee Kinematics in the Anterior Cruciate Ligament Deficient Subject

Jennifer Webster (Medical Student Research Rotation, 1999) - A Prospective Study of Knee Injury Risk Factors in Competitive Alpine Ski Racers

Peter Fisk (Medical Student three-month Summer Research, 1999) – The Effect of Age and Gender on Knee Joint Proprioception

Maureen Sarle (Medical Student three-month Summer Research, 1999) – Reliability of Knee Joint Proprioception Measurements Using a New Joint Motion Detection System

Michael Dayton (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1999-2000) – Cement Intrusion into the Femoral Canal During Placement of Hip Arthroplasty

Pat Devanny (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1999-2000) – The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity and Neuromuscular Function

Benjamin Uh (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 1999-2000) – The Benefit of a Single-Leg Strength Training Program for the Muscles Around the Untrained Ankle: A prospective, randomized, controlled study

Darlene Murphy (Research Project Assistant, 1999-2003) – A Prospective Study of Ankle Injury Risk Factors

Audrey Coates (Thesis Committee Member, M.S. Mechanical Engineering, 2000) – The Design, Development, and Validation of the EMG Grid

Marc Richard (Medical Student Research Rotation, 2000) – Accuracy of Joint Space Width Measurements Using Radiological Techniques

David Paller (undergraduate Athletic Training Program, Spring 2000) – Risk Factors for Muscle Injury

Ryan Andrews (undergraduate Physical Therapy Program, one-year Research Rotation, 2000-2001) – The Effect of Immobilization and Contralateral Limb Exercise on the Normal Ankle

Adelle Belisle (Medical Student Research Rotation, 2000-2001) – The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity, and Strength

Stuart Braun (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2000-2001) – Serum Estrogen and Progesterone Levels at the Time of Knee Ligament Injury

Donald Dupuis (Medical Student Research Rotation, 2000-2001) – Reproducibility of Joint Space Width Measurements Using Radiological Techniques with Guidelines and Digitalization

Brian Goodman (Medical Student Research Rotation, 2000-2001) – The Effect of Immobilization and Contralateral Limb Exercise on the Normal Ankle

Todd Havener (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2000-2001) – Secur-Fit Plus Total Hip Arthroplasty

Solomon Lakey (undergraduate, one-year Research Rotation, 2000-2001) – The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity and Neuromuscular Function

Kevin Mullaney (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2000-2001) – Measurement of Normal Glenohumeral Motion

Lucas Williams (undergraduate, four-month Research Rotation, 2000-2001) – A Prospective Study of Ankle Injury Risk Factors

Adelle Belisle (Senior Anatomy Elective, 2001) – Effect of Intercondylar Notch Width on ACL Injury

Justine Dee (Thesis Committee Member, M.S. Physical Therapy, 2001) – Treatment of Lateral Epicondylitis: Comparing traditional exercise protocols with periscapular strengthening

David Paller (Bioengineering Graduate Student, 2001-present) – A Prospective Study of Ankle Injury Risk Factors; Biomechanical Testing of Intramedullary Fixation of Distal Femoral Fractures in Osteoporosis Bone: The value of locked (fixed angle) distal locking screws

Scott Hallock (graduate student in Biomedical Engineering, M.S., 2001-present) – An In-Vivo Model for Load Induced Articular Cartilage Degeneration

Eric Mullins (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2001-2002) – Kinematic Analysis of Kneeling After Total Knee Arthroplasty

Randall Risinger (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2001-2002) – The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity and Neuromuscular Function

Harrison Tuttle (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2001-2002) – Continuous Subacromial Bupivacaine Infusion for Post-Operative Analgesia after Shoulder Surgery

Darlene Murphy (Thesis Committee Member, M.S. Education Curriculum and Instruction, 2002) – Can Dynamic Foot Morphology, Quantified by Contact Area and Plantar Pressure Measures Collected Beneath the Midfoot, be used to Predict Lower Extremity Injury? A Prospective Study

Stephen Kelly (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2002-2003) – The Use of a Porous Coated Primary Stem in Revision Total Hip Arthroplasty

Robert Mihalich (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2002-2003) – A Retrospective Clinical Review of Simultaneous, Bilateral, Cementless Total Hip Replacement Using a Single Stem

Scott Wisotsky (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2002-2003) – A Prospective, Randomized, Double-Blinded Investigation of Rehabilitation Following Anterior Cruciate Ligament Reconstruction: A five-year follow-up; Passive Shoulder Internal-External Rotation Kinematics Assessed *In Vivo*

Aaron Frodsham (Medical Student Research Rotation, 2002-2003) – Serum Estrogen and Progesterone Levels at the Time of Knee Ligament Injury; and A Prospective Study of Ankle Injury Risk Factors

Karalyn Church (Medical Student Research Rotation, 2002-2003) – Serum Estrogen and Progesterone Levels at the Time of Knee Ligament Injury

Christina Beardsley (NIH post-doctoral fellow PhD, 2002-2004) – Evaluation of the Repeatability of the Redesigned VGLD; Stereo-radiographic Measurement of Glenohumeral Motion in Cadaver Specimens

Maria Roemhildt (NIH post-doctoral fellow PhD, 2002-2004) – An In-vivo Model for Load Induced Articular Cartilage Degeneration in the Goat

Dana Dunleavy (Medical Student Research Rotation, 2003) – An In-Vivo Model for Load Induced Articular Cartilage Degeneration

Brian Goodman (Senior Research Elective 2003) – The effect of Immobilization and Contralateral Limb Exercise on the Normal Ankle: A Prospective, Randomized, Controlled Study

Andrew Tinsley (Medical Student Fellowship Summer Research 2003) – Evaluation of Repeatability of Varus-Valgus and Internal-External Knee Laxity using the Vermont Knee Laxity Device

Denise Durant (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2003-2004) – The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity and Neuromuscular Function

Nathan Endres (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2003-2004) – Kinematic Assessment of Spine Fusion Healing

Seth Frenzen (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2003-2004) – Snowboarding Injuries in Children, Adolescents and Adults

Lee Kaback (Senior Surgery Research Elective, 2004) – Biomechanical Evaluation of Intramedullary Fixation of Distal Femoral Fractures in Osteoporotic Bone: The value of locked (fixed angle) distal screws

Nathan Richardson (Medical Student Research Rotation, 2004) – Biomechanical Testing of Intramedullary Fixation of Distal Femoral Fractures in Osteoporosis Bone: The value of locked (fixed angle) distal locking screws

Robert Doohen (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2004-2005) – Effect of Tibial Insert Design on Anterior-Posterior Contact Position in Total Knee Arthroplasty

Alexander Hennig (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2004-2005) – Tibial Fixation of Hamstring ACL Graft: Comparison of Ultimate Yield Load Before and After Re-tensioning Between the Graft Sleeve System and Conventional Fixation

Peter Kelleher (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2004-2005) – The Characterization of the Effects of Total Excision of the Clavicle on Human Shoulder Mechanics and Function as Assessed *In Vivo*

Nathan Richardson (Senior Surgery Research Elective, 2005) – Three Dimensional Comparison of Intramedullary Nail Fixation of Supracondylar Femur Fractures in Osteoporotic Bone

Patrick Noud (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2005-2006) – Maintenance of Fracture Alignment in Unstable Distal Femur Fractures Fixed with Retrograde Nails: A comparison of locked and unlocked distal screw fixation

John Wild (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2005-2006) – Early Failure of Total Knee Arthroplasty and Subsequent Revision

Ryan Putnam (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2005-2006) – The Effect of Estradiol and Progesterone on Ankle and Knee Joint Strength

David Paller (Thesis Committee Member, M.S. Biomedical Engineering, 2005) – An accuracy Assessment of the UmRSA System and A 3D Comparison of Nailed Osteopenic Femurs with Supracondylar Fractures

Blake Clifton (Medical Student Research Rotation, Summer 2006) – A Prospective, Randomized, Double-Blinded Investigation of Rehabilitation Following Anterior Cruciate Ligament Reconstruction

Lee Morse (Medical Student Research Rotation, March, April, and May 2007) – The Use of Serum and Synovial Fluid Biomarkers to Predict Joint Space Narrowing About the Knee

Benjamin Bissell (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2006-2007) – Humerus Fractures in Skiers and Snowboarders

Tucker Drury (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2006-2007) – Spondylolisthesis in Patients with Neurogenic Claudication Affects Functional Performance and Self Reported Quality of Life

Benjamin Geer (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2007-2008) – An Epidemiologic Study of clavicle Injuries in Alpine Sports

Gregory Grabowski (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2007-2008) – A Comparison of radiographic Techniques in the Diagnosis of Lumbar Spondylolisthesis: Can we use fewer radiographs

Chad Patton (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2007-2008) – Fractures of the Distal radius in Alpine Sports: A study of thirty-four seasons from 1973-2007

Lee Morse (Medical Student Senior Surgery Research Elective, 2008) – A Prospective Study of the Relationship Between Serum and Synovial Fluid Markers of Cartilage Metabolism Obtained at the Time of ACL Reconstruction and Structural Changes of the Tibiofemoral Joint at Five year Follow-up

Stephen Appleton (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2008-2009) – Isolated Syndesmotic Screw Fixation of Weber C Ankle Fractures

Joseph McLaughlin (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2008-2009) – Radiographic Validation of a Stability Based Ankle Fracture Classification and Treatment Algorithm

Nathaniel Nelms (post-doctoral M.D. four-month Orthopaedic Resident Rotation, 2008-2009) – Lumbar Pedicle Structural Changes in Osteoporosis

Benjamin Walter (Thesis Committee Member, M.S., M.E. Biomedical Engineering, 2010) – Injurious asymmetric Compression Loading in a Large Animal Explant Model Induces Acute Tissue and Cellular Changes

Helen Smith (Advisor and Thesis Committee Member, M.S. Clinical and Translational Science, 2011) – A Prospective Evaluation of the Landing Error Scoring system (LESS) as a Screening Tool for Anterior Cruciate Ligament Injury Risk

Leonie Cowley (Advisor and Thesis Committee Member, M.S. Mechanical Engineering, 2011) – Mechanical Role of Phospholipid Bilayers in Boundary Lubrication of Synovial Joints

H Fujiya and P Kousa (Fellows, 2011) Effect of muscle loads and torque applied to the tibia on the strain behavior of the anterior cruciate ligament: An in vitro investigation

DJ Paller (Advisor and Thesis Committee Member, M.S. Mechanical Engineering, 2013) – A Three Dimensional Comparison of Intramedullary Nail Constructs for Osteopenic Supracondylar Femur Fractures

JW Goetschius (Advisor of Undergraduate, Honors College Thesis 2012) – Application of a clinic-based algorithm as a tool to identify female athletes at risk for anterior cruciate ligament injury: a prospective cohort study with a nest, matched case-control analysis

Timothy Tourville (Advisor and Thesis Committee Member, Ph.D. Clinical and Translational Science 2013) – Relationship between markers of type II collagen metabolism and tibiofemoral joint space width changes after ACL injury and reconstruction

James Rubright (Advisor of PGY3 Orthopaedics Resident Research 2014) – Long-term clinical outcomes, motion, strength, and function after total claviclectomy

S Bradley Daines (Advisor of PGY 3 Orthopaedics Resident Research 2014) – What is the best material for molding casts in children?

John Hall (Advisor of PGY3 Orthopaedics Resident Research 2015) – Increased slope of the lateral tibial plateau subchondral bone is associated with greater risk of noncontact ACL injury in females but not in males: a prospective cohort study with a nested, matched case-control analysis.

D Whitney (Advisor of Medical Student research, first year 2014) – Relationship between the risk of suffering a first-time noncontact ACL injury and geometry of the femoral notch and ACL: a prospective cohort study with a nest case-control analysis

Robert Van Gorder (PGY 3 Orthopaedics Resident 2014) Tibial articular cartilage and meniscus geometries combine to influence female risk of anterior cruciate ligament injury

Daniel Sturnick (Advisor and Thesis Committee Member, M.S. Mechanical Engineering 2015) – Combined anatomic factors predicting risk of anterior cruciate ligament injury for males and females

Erin Argentieri (Advisor of Undergraduate Honors College Thesis, 2014) – Changes to the articular cartilage thickness profile of the tibia following anterior cruciate ligament injury

Scott Wasilko (PGY 3 Orthopaedics Resident, 2015) – The relationship between synovial fluid biomarkers of

articular cartilage metabolism and the patient's perspective of outcome depend on the severity of articular cartilage damage following ACL trauma

Jimmy Levins (Medical Student, first year 2016) – Geometric risk factors associated with noncontact anterior cruciate ligament injury

Josh Carter (PGY 3, Orthopaedic Resident 2016) – Relationship between geometry of the extensor mechanism of the knee and risk of anterior cruciate ligament injury

Mike Fitzgerald (PGY 3 Orthopaedic Resident 2017) – Lift-off test results after lesser tuberosity osteotomy versus subscapularis peel in primary total shoulder arthroplasty

Jimmy Levins (Medical Student, fourth year, 2017) – Geometric characteristics of the knee are associated with a noncontact ACL injury to the contralateral knee after unilateral ACL injury in young female athletes

Mayo Fujii (PGY 3, Surgery Resident 2018) – Post-discharge opioid prescribing and use after common surgical procedures

Chris Birch (PGY 3, Orthopaedic Resident 2018) - Subchondral trabecular bone integrity changes following ACL injury and reconstruction: a cohort study with a nested, matched case-control analysis

Tess Bradish (Advisor and Thesis committee member MS Bioengineering, 2018). Reliability of Inter- and intra-examiner loading of the knee joint during magnetic resonance imaging in-vivo.

Ryan Caldwell (PGY 3, Orthopaedic Resident 2019) Risk Factors Associated With a Noncontact Anterior Cruciate Ligament Injury to the Contralateral Knee After Unilateral Anterior Cruciate Ligament Injury in High School and College Female Athletes: A prospective study

Geordie Lonza (Medical Student, first year 2019) – Radiographic-based measurement of tibiofemoral joint space width and magnetic resonance imaging derived articular cartilage thickness are not related in subjects at risk for post traumatic arthritis of the knee

Annabell Davey (Medical Student, first year 2019) – Risk Factors Associated With a Noncontact Anterior Cruciate Ligament Injury to the Contralateral Knee After Unilateral Anterior Cruciate Ligament Injury in High School and College Female Athletes: A prospective study

Kristen Roensch Kress (PGY 3, Orthopaedic Resident 2019). Post-Discharge opioid prescribing and use after common surgical procedure.

Reed Gurchiek (Thesis Committee Member, M.S. Mechanical Engineering 2019) Open-source Remote Gait Analysis: A Post-Surgery Patient Monitoring Application

Kendra Lennon (Advisor Undergraduate, Honors College 2019). The effects of ACL injury and reconstruction with a bone-patella tendon-bone graft on articular cartilage thickness of the patella in males and females

Ben Albertson (Advisor of Medical Student Research Rotation 2018-2019) Incidence of Anterior Tibial Spine Fractures Among Skiers

Michael Bynum (Medical student, first year 2020) Association of geometric characteristics of knee anatomy (alpha angle and intercondylar notch type) with risk of noncontact ACL injury.

Evan Boyd (PGY 3, Orthopaedic Resident 2020) Measurement of femoral notch type shows low inter-rater reliability

David Christansen (PGY 3, Orthopaedic Resident 2020) Comparison of Tip vs Hub Oscillating Saw Blade Control

in a Total Knee Arthroplasty Model

Alexa Pius (Advisor of Medical Student Research Rotation 2020-2022): Articular Cartilage Thickness Changes Differ Between Males and Females 4 Years Following Anterior Cruciate Ligament Reconstruction.

Ben Kagen (Advisor of Medical Student Research Rotation 2020-2022): Biomechanical Comparison Of A Novel Tensioned Cable Construct Versus Tension Band Wiring For Transverse Patella Fracture Fixation.

Willy Dong (Advisor of Medical Student Research Rotation 2020-2022): A Prospective Study of Joint Position Sense After Anterior Cruciate Ligament Injury, Reconstruction With a Bone-Patella Tendon-Bone Graft, and Rehabilitation

Haily Reist (PGY1-PGY5, Orthopedic Resident): Risk Factors For Concomitant Meniscus Injuries In Sport Related Anterior Cruciate Ligament Injuries.

RESEARCH SUPPORT – ACTIVE

1 R01 AR076765 – Beynnon (PI)

7/1/2020-6/30/2024

“The Adaptive Response of Skeletal Muscle, Bone, and Cartilage to Severe Knee Trauma Involving ACL Disruption with and without Concomitant Injury to the Meniscus.” This study will provide a mechanistic understanding of the evolution of knee joint pathology associated with anterior cruciate ligament injury with and without concomitant injury to the meniscus that leads to post traumatic osteoarthritis (PTOA), and the modifying effects of sex, BMI and joint geometry.

Role: PI

2 R01 AR050421-07 NIH – Beynnon (PI)

9/1/18-8/31/24

“Prognostic study of the risk factors for contralateral ACL injury”

This application is focused on establishing a complete understanding of the risk factors for a CACL injury as an essential next step for understanding why these injuries occur.

Role: PI

1R21AR077371 – Fiorentino (PI)

2/8/2021 to 1/31/2024

“**Biomechanical factors following ACLR with meniscal resection.**” This study will measure biomechanical factors, which may be early indicators of osteoarthritis, in patients after an ACL reconstruction with meniscal resection, with the long-term goal of developing novel treatments that reduce the number of patients who develop early-onset osteoarthritis.

Role: Co-investigator

RESEARCH SUPPORT – COMPLETED**R21 AR069199 NIH – Beynnon/Toth (Co-PIs)**

9/2016-2/28/2019

“Prevention of skeletal muscle adaptations to traumatic knee injury and surgery”

The goal of this study is to show that early intervention to maintain muscle activation will prevent weakness and dysfunction from developing, which will serve as preliminary data to support larger randomized controlled trials examining whether this approach improves clinical and patient-reported outcomes and lessens the risk for future joint pathology.

Role: Co-PI

Orthopaedic Research and Education Foundation – Beynnon & Slauterbeck (CoPI)

7/2015-6/2018

“Will FIFA 11+, an Injury Prevention Program, Decrease Lower Extremity Injuries in High School Athletes?”

This investigation was designed to determine if high school athletes that participate in an injury prevention program (FIFA 11+) can decrease their incidence of ACL and lower extremity injury Role:

Co-Investigator

1 R01 AG033547-01A2 NIH – Toth (PI)

9/15/10-6/30/15

5%

“Muscle Disuse and Contractile Dysfunction in the Elderly”

\$395,008

Skeletal muscle disuse is an important contributing factor to disability in the elderly. Knowledge gained from the proposed studies will assist in the development and refinement of preventative and corrective clinical therapies for disability by tailoring these approaches to address specific cellular and molecular defects.

Role: Co-PI – Direction, interpretation, and communication (manuscripts) of research

1 R01 AR050421-01A2 NIH – Beynnon (PI)

9/07/07-9/30/14

40%

“A Case-Control Study of ACL Injury Risk Factors”

\$264,804

The goal of this project is to perform a comprehensive investigation of potential ACL injury risk factors. The primary hypothesis is that one or a combination of risk factors can be used to identify athletes at increased risk of ACL injury. The secondary hypothesis is that the effects of individual risk factors are different for men and women.

Role: PI

Stryker-Howmedica-Osteonics – Ames (PI)

1/01/10-3/31/12

<5%

“Bone Architecture of the Lumbar Pedicle: Can we measure cortical thickness with spiral computer tomography?”

\$18,392

Role: Co-PI – Direction, interpretation, and communication (manuscripts) of research

1 R01 AR051477-01 NIH – Beynnon (PI)

8/11/04-9/30/10

50%

“The Relationship Between Biomarkers of Cartilage Metabolism and OA”

The goal of this project was to measure the temporal changes in the concentrations of the biomarkers of articular cartilage metabolism obtained from synovial fluid samples, and joint space width narrowing (a validated indicator of the progression of OA)

1 R21 AR052815-01A1 NIH – Roemhildt (PI)

5/01/06-2/28/09

<5%

Load Induced Cartilage Degeneration in the Knee

The primary aim of this study was to compare the histological scores of articular cartilage obtained from the tibiofemoral joints of the experimental groups to explore the relationship between increased load and articular cartilage degeneration

2 T32 AR07568-09 NIH-NIAMS – Beynnon (PI)

7/01/02-12/31/08

<5%

“Training in Orthopaedic Science”

\$96,784

The major goal of this project was to train MDs and PhDs in biomechanics Research.

Stryker Orthopaedics (formerly Howmedica Osteonics) – Beynnon (PI)

10/01/05-2/28/07

<5%

Ex. 1018, p. 60

“Biomechanical Evaluation of Intramedullary Fixation of Distal Femoral Fractures in Osteoporotic Bone: The Value of Locked (Fixed Angle) Distal Locking Screws (Phase II)” The major goal of this project was to evaluate the ability of the T2 nail to maintain fracture site stability in response to axial loading, the primary loading mechanism that distal fractures of the femur are exposed to during healing.	\$17,327	
Smith and Nephew Endoscopy, Inc. – Beynnon (PI) “Biomechanical Comparison of the Graft Sleeve System versus a Tapered 35-mm Bioabsorbable Interference Screw used for Tibial Fixation of a 4-stranded Hamstring Tendon ACL Autograft” The major goal of this project was to compare the structural properties of tibial fixation using quadrupled hamstring tendon graft with the Graft Tunnel Solution Sleeve versus a tapered 35-mm bioabsorbable interface screw. This will involve cyclic tensile loading, followed by a single cycle load-to-failure evaluation.	1/01/05-12/31/05 \$11,400	<5%
Howmedica-Osteonics – Beynnon (PI) “Biomechanical Evaluation of Intramedullary Fixation of Distal Femoral Fractures in Osteoporotic Bone: The Value of Locked (Fixed Angle) Distal Locking Screws (Phase I)” The major goal of this project was to evaluate the ability of the T2 nail to maintain fracture site stability in response to axial loading, the primary loading mechanism that distal fractures of the femur are exposed to during healing.	8/21/03-8/20/04 \$73,800	<5%
Arthritis Foundation – Beynnon (PI) “An In-Vivo Model for Load Induced Articular Cartilage Degeneration” The major goal of this project was to develop and utilize an animal model to quantify the role of abnormal mechanical loads in articular cartilage degeneration, particularly that analogous to unicompartamental osteoarthritis of the knee.	1/01/01-6/30/04 \$90,000	10%
d.j. Orthopaedics – Beynnon (PI) “The Effectiveness of Conservative Rehabilitation Administered with the Vista System for the Treatment of Patients Following ACL Surgery” The major goal of this project was to determine the effectiveness of the Vista Brace for rehabilitation of patients following Anterior Cruciate Ligament ACL surgery with and without meniscus repair.	9/01/01-6/30/04 \$38,081	<5%
d.j. Orthopaedics – Abate (PI) “Continuous Subacromial Bupivacaine Infusion for Post-Operative Analgesia After Shoulder Surgery” The major goal of this project was to compare the effectiveness of continuous subacromial infusion of bupivacaine to interscalene blocks, and to determine the infusion rate that provides the optimal pain control.	12/01/01-4/30/04 \$15,000	<5%
Osteonics, Inc. – Incavo (PI) “The Biomechanics of Total Joint Arthroplasty” The major goal of this project was to study the effect to TKA design characteristics on the kinematics of the tibiofemoral and patellofemoral joints as well as patellofemoral loading.	10/01/99-12/31/03 \$41,667	<5%
ACL Study Group – Beynnon (PI) “Serum Hormone Levels at the Time of Anterior Cruciate Ligament Injury” The major goal of this project was to determine, based on serum hormone levels, if the phase of the menstrual cycle has an effect on the risk of suffering an ACL injury.	11/01/02-10/31/03 \$6,000	<5%
Aircast, Inc. – Beynnon (PI) “A Prospective Study of Ankle Injury Risk Factors and Achilles Tendinosis” The major goals of this project were to investigate ankle injury risk factors and Achilles tendinosis.	11/15/99-6/30/03 \$45,000	<5%
R01 AR45246-04 NIH – Beynnon (PI) “A Prospective Study of Ankle Injury Risk Factors”	7/01/99-6/30/03 \$99,465	30%

The major goal of this project was to determine the underlying risk factors that predispose athletes to inversion ankle trauma.

Aircast – Beynnon (PI)

11/01/99-11/30/02

“The Effect of Estrogen and Progesterone Levels on Knee and Ankle Joint Laxity and Neuromuscular Function”.

Role: Principal Investigator: Direction, interpretation, and communication (manuscripts) of research

Arthritis Foundation – Johnson (PI)

10/01/98-9/30/02

<5%

“Prospective, Randomized, Double-Blinded Investigation of Rehabilitation

\$74,074

Following Anterior Cruciate Ligament Reconstruction”

The major goal of this project was to determine the effect of an aggressive versus a non- aggressive rehabilitation program following ACL reconstruction via biomechanical and biochemical analyses.

AO Research Commission – Krag (PI)

1/01/00-9/30/01

<5%

“Development of a Telemeterized Implant to Measure Spinal Loads In Vivo”

\$50,000

The major goal of this project was to develop an instrumented spinal implant by combining the standard Synthes Spinal Implant, strain gage technology, and the multi-channel strain gauge telemetry system developed by MicroStrain.

Orthopaedic Research and Education Foundation – Uh (PI)

7/01/00-6/30/01

<5%

“The Effect of Immobilization & Contralateral Limb Exercise on the Normal Ankle” \$15,000

The goal of this project was to determine the cross-over effect of strength training on the contralateral limb when it is immobilized in a prospective study.

DePuy Orthopaedics, Inc. – Beynnon (PI)

10/17/00-5/01/01

<5%

“Virtual Knee Analyses”

\$19,304

The major goal of this project was to compare kinematics of various knee designs.

NFL Charities – Fleming (PI)

10/01/00-9/30/01

5%

“In Vivo Measurement of Anterior Cruciate Ligament (ACL) Strain During Rehabilitation Exercises” (competitive continuation)

\$79,100

The major goals of this project were to determine the interaction between externally applied loads, muscle forces, and the ACL strain response in human subjects.

ACL Study Group – Beynnon (PI)

5/01/97-5/31/00

<5%

“A Prospective, Randomized, Double-Blinded Investigation of Rehabilitation Following ACL Reconstruction”

\$10,000

The major goal of this project was to determine the relationship between the effect of an aggressive versus a non-aggressive rehabilitation program following ACL reconstruction.

R03 AR45027-03 NIH/NIAMS – Fleming (PI)

9/15/97-8/31/00

<5%

“Experimental Model to Evaluate ACL Graft Healing”

\$50,290

The major goal of this project was to develop an experimental model and provide pilot data that will be used to investigate the relationship between the initial tension applied to an ACL graft at the time of fixation and the healing response of the graft.

P20 AR46667 NIH– Galbraith (PI)

9/01/99-8/31/00

<5%

“Planning Grant for Multipurpose CRCs”

\$99,730

The major goal of this project was to plan a Multipurpose Clinical Research Center with a multidisciplinary group of investigators addressing musculoskeletal conditions.

Smith & Nephew Endoscopy, Inc. – Beynnon (PI)

4/15/97-4/14/00

10%

“The Effect of Rehabilitation After Knee Ligament Trauma”

\$30,000

The major goals of this project were to compare aggressive and non-aggressive rehabilitation programs over time in

a prospective, randomized trial, and to determine which is optimal.

Bauerfeind GmbH – Beynnon (PI)	3/16/98-12/31/99	5%
“The Effect of Functional Braces on the Chronic ACL-Deficient Knee”	\$27,985	

The major goal of this project was to study the biomechanical effect of functional knee braces on subjects with anterior cruciate ligament-deficient knees.

Aircast, Inc. – Beynnon (PI)	7/01/97-12/31/99	10%
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Project #1: “Peroneal Muscle EMG and Peroneal Muscle Force Development in Response to Sudden Ankle Inversion” \$38,183

Project #2: “Relationship Between Mechanical Ankle Instability, Combined Talar and Subtalar Instability, and Inversion of the Ankle/Foot”

The major goals of these projects were: 1) to assess the development of eversion torque in the foot/ankle complex and the peroneal muscles in response to sudden ankle inversion, and 2) to investigate the relationship between mechanical instability of the talocrural joint and post-traumatic laxity of the lateral structures of the ankle.

Aircast, Inc. – Beynnon (PI)	7/01/97-12/31/99	10%
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“Prospective, Randomized Investigation of Conservative Treatment of Chronic Ankle Sprains” \$57,823

The major goals of this project were to evaluate the efficacy + cost effectiveness of 3 treatment techniques for chronic ankle sprains.

Smith & Nephew DonJoy, Inc. – Beynnon (PI)	8/01/98-7/31/99	20%
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“The Effect of the DonJoy Legend Brace on the ACL with Internal-External and Varus-Valgus Torques Applied to the Knee in WB and Non-WB Conditions” \$47,924

The goals of this project were to determine how ACL strain values were affected by the compressive joint load produced by body weight with and without internal-external and varus-valgus torques applied to the tibia in the presence of bracing.

Updated: 02/27/2023