

## CURRICULUM VITAE BRADEN CAMPBELL FLEMING

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### EDUCATION

Undergraduate	University of Vermont, Bioengineering, B.S., 1983
Advanced Degrees	University of Vermont, M.S. Biomedical Engineering, 1991 University of Vermont, Ph.D. Mechanical Engineering, 1996

### POSTGRADUATE HONORS AND AWARDS

William A. Grana Award for Best Original Research, Presented by the American Orthopaedic Society of Sports Medicine, July 2025  
Cabaud Research Award, Presented by the American Orthopaedic Society of Sports Medicine, July 2024  
Orthopaedic Research & Education Foundation Clinical Research Award, Presented by the American Academy of Orthopaedic Surgeons, March 2022  
Orthopaedic Research Society Fellow, Class of 2022, February 2022  
William A. Grana Award for Best Original Research, Presented by the American Orthopaedic Society of Sports Medicine, July 2020  
[O'Donoghue Sports Injury Research Award](#), Presented by the American Orthopaedic Society of Sports Medicine, July 2020  
[Orthopaedic Research & Education Foundation Clinical Research Award](#), Presented by the American Academy of Orthopaedic Surgeons, March 2020  
[Cabaud Research Award](#), Presented by the American Orthopaedic Society of Sports Medicine, July 2013  
[Kappa Delta Ann Doner Vaughn Award](#), Presented by the American Academy of Orthopaedic Surgeons, March 2013  
BREG/ACL Study Group Traveling Fellowship, Presented by the ACL Study Group, 2010 to 2012  
Cabaud Research Award, Presented by the American Orthopaedic Society of Sports Medicine, July 2009

Mimics Innovation Research Award, Presented by Materialise, May 2008  
 Hughston Award, Presented by the American Orthopaedic Society of Sports Medicine, July 2006  
 Bruce Selya Research Award, Presented by Lifespan/Brown Medical School, September 2005  
 O'Donoghue Sports Injury Research Award, Presented by the American Orthopaedic Society of Sports Medicine, February 2005  
 GOTS-Beiersdorf Research Award, Presented by the Gesellschaft Fur Orthopadisch Traumatologische Sportmedizin, June 2000  
 Postdoctoral Young Scientist Award, Presented by the American Society of Biomechanics, October 1999  
 Albert Trillat Young Investigator Award, Presented by the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, May 1997  
 O'Donoghue Sports Medicine Award, Presented by the American Society of Orthopaedic Sports Medicine, June 1996  
 Excellence in Research Award, Presented by the Department of Orthopaedics, University of Vermont, June 1995  
 Kappa Delta Elizabeth Winston Lanier Award, Presented by the American Academy of Orthopaedic Surgeons, February 1994  
 Excellence in Research Award, Presented by the Department of Orthopaedics, University of Vermont, June 1994  
 Bio-engineering Student Paper Competition, Presented by NASA, March 1994  
 Albert Trillat Young Investigator Award, Presented by the International Knee Society, June 1993  
 Predoctoral Young Scientist Award, Presented by the American Society of Biomechanics, August 1992

#### ACADEMIC APPOINTMENTS

Lucy Lippitt Professor of Orthopaedics: Warren Alpert Medical School of Brown University, 07/10 – present  
 Adjunct Professor: Division of Engineering, Brown University; 07/08 – present  
 Professor of Orthopaedics: Warren Alpert Medical School of Brown University, 07/08 – 06/10  
 Associate Professor of Orthopaedics: Warren Alpert Medical School of Brown University, 11/03 – 06/08  
 Adjunct Associate Professor: Division of Engineering, Brown University; 06/05 – 06/08  
 Assistant Professor of Orthopaedics: Brown Medical School; 06/03 – 10/03  
 Assistant Professor: Graduate College, University of Vermont; 01/98 – 05/03  
 Research Assistant Professor: University of Vermont College of Medicine; 11/96 – 05/03

#### HOSPITAL APPOINTMENTS

Co-Director of the Bioengineering Core of the COBRE for Skeletal Health and Repair, Rhode Island Hospital; 09/07 – present  
 Senior Investigator: Rhode Island Hospital, 06/03 – present

#### OTHER APPOINTMENTS

Associate Editor; American Journal of Sports Medicine; 07/13 –Present  
 ORS Publications Committee; 02/24 – 02/26  
 National Institutes of Health Study Section; Clinical Studies Special Emphasis Panel (ZRG1 MSOS-P (54)); 07/25  
 National Institutes of Health Study Section; Musculoskeletal Rehabilitation Sciences Study Section (2025/05 MRS); 04/25  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Special Grants Study Section (2025/01 AMS 1); 10/24  
 Natural Sciences and Engineering Research Council of Canada, Discovery Grant Applications External Reviewers; 01/25  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Clinical Trials Study Section (2024/05 AMSC 1); 02/24  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Clinical Trials Study Section (2024/01 AMSC 1); 10/23  
 Orthopaedic Research and Education Foundation; OREF Clinical Research Award Peer Review Committee; 2020-2023.  
 Department of Defense FY23 Peer Review Medical Research Program Review Committee (PRMRP CT- MSH1), 09/23.  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Member Conflict Special Emphasis Panel; 10/2022  
 Orthopaedic Research and Education Foundation Study Section; OREF Injectable Orthobiologics of Knee Osteoarthritis Grants; 04/2022  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Mechanistic Ancillary Studies Study Section; 02/2022  
 National Institutes of Health Study Section; Arthritis and Musculoskeletal and Skin Diseases Special Grants Study Section; 10/2021  
 National Institutes of Health Study Section; Musculoskeletal Tissue Engineering; 10/2020  
 National Institutes of Health Study Section; Member Conflict: Bioengineering Sciences & Technologies; 06/2020  
 National Institutes of Health Study Section; NIAMS Ancillary Studies; 02/2020  
 Canadian Foundation for Innovation; Grant reviewer; 01/2020  
 National Institutes of Health Study Section; NIAMS Ancillary Studies; 10/2019  
 Orthopaedic Research and Education Foundation Study Section; The Treatment of Knee Osteoarthritis Research Grants; 07/2019  
 National Institutes of Health Study Section (member); Musculoskeletal Rehabilitation Sciences; 07/01/2015 – 06/30/2019  
 National Institutes of Health Study Section; NIAMS Ancillary Studies; 03/2019  
 National Institutes of Health Study Section; Loan Repayment Program; 04/2017  
 Department of Defense; Peer Reviewed Medical Research Program Study Section; 12/2017  
 Co-chair of the Tendon/Ligament Topic Committee, Orthopaedic Research Society, 04/2015-03/2017  
 Orthopaedic Research and Education Foundation; Reviewer Panel; Prospective Clinical Research Grants, 11/2016  
 Orthopaedic Research and Education Foundation; Reviewer Panel; Soft Tissue Repair and Regeneration in Sports Medicine Grants, 08/2016

American Orthopaedic Society for Sports Medicine; Program Committee, 08/2013-07/2016

National Institutes of Health Study Section; Special Emphasis Panel; ZRG1 MOSS-D82, 10/2016

National Institutes of Health Study Section; Special Emphasis Panel; 2016/10 ZAR1 YL (M1) 1, 06/2016

National Institutes of Health Study Section; Loan Repayment Program; 04/2016

Program Committee, International Symposium of Ligament & Tendon, 2015

Arthritis Foundation (Delivery on Discovery RFP 2015) Study Section, 09/2015

National Institutes of Health Study Section; Musculoskeletal Rehabilitation Sciences; 02/2015

Department of Defense; Peer Reviewed Medical Research Program Study Section; 09/2014.

National Institutes of Health Study Section; Special Emphasis Panel: ZRG1 MOSS-U82; 07/2014

National Institutes of Health Study Section; Special Emphasis Panel; NIH Director's Early Independence Awards; 06/2014

National Institutes of Health Study Section; Special Emphasis Panel; COBRE; 06/2013

National Institutes of Health Study Section; Special Emphasis Panel; Skeletal Biology, Dental, Arthritis and Tissue Engineering; 03/2013

National Institutes of Health Study Section; Special Emphasis Panel; Institutional Development Award (IDeA) Program Infrastructure for Clinical and Translational Research; 02/2013

National Institutes of Health Study Section; Special Emphasis Panel; Oral Biology and Craniofacial Development; 07/2012

The Arthritis Society (Canada); Investigator Award Review Panel; 03/2012

National Institutes of Health Study Section; Special Emphasis Panel; Clinical Trials Grant Review; 11/2011

International Symposium of Ligament & Tendon; Program Committee; 2011

National Institutes of Health Study Section; Skeletal Biology Structure and Regeneration Study Section; 06/2010

Orthopaedic Research Society; Nomination Committee - Bioengineer, 2009

National Institutes of Health Study Section (member); Skeletal Biology Structure and Regeneration Study Section; 02/2004 – 06/2008

International Symposium of Ligament & Tendon, Co-Chair of the Program Committee, 09/07 – 04/08

National Institutes of Health Study Section; Special Emphasis Panel; Medical Bone/Cartilage Imaging; 06/2005

National Institutes of Health Study Section; R03 Small Grants for New Investigators Study Section; 03/2004, 08/2004

National Institutes of Health Study Section; Arthritis, Musculoskeletal, Skin Diseases (1) Study Section; 02/2004

National Institutes of Health Study Section; Special Study Section: SSS5-10; 11/2002

National Institutes of Health Study Section; Special Study Section: RFA AR-00-006; 11/2001

National Institutes of Health Study Section; Special Study Section: RFA PA-00-069; 08/2001

National Institutes of Health Study Section; Special Study Section: RFA HD-98-006;  
12/1998  
American Orthopaedic Society of Sports Medicine Research Committee; 12/1998-  
12/2002  
Vermont Experimental Program to Stimulate Competitive Research: Review Board;  
05/1999 – 05/2002  
Journal of Applied Biomechanics: Editorial Board; 09/02 – 07/13  
American Journal of Sports Medicine: Editorial Board; 04/04 – 07/13  
Program Committee, Orthopaedic Research Society, 2004, 2008  
Program Committee, International Symposium of Ligament & Tendon, 2007  
Co-Chair Program Committee, International Symposium of Ligament & Tendon, 2008  
Journal of Bone & Joint Surgery: Review board, 1994 – present  
Clinical Orthopaedics & Related Research: Review board, 1996 – present  
American Journal of Sports Medicine: Review board, 1996 – 2004  
Journal of Orthopaedic Research: Review board, 1995 – present  
Journal of Biomechanics: Review board, 1997 – present  
Exercise & Sport Science Review: Review board, 2002 – present  
Annals of Biomedical Engineering: Review board, 2003 – present  
Knee Surgery, Sports Traumatology & Arthroscopy: Review board, 2004 – present  
Osteoarthritis & Cartilage: Review board, 2008 – present  
Scandinavian Journal of Medicine & Science in Sports: Review board, 2009 – present  
Arthritis & Rheumatism: Review board, 2009 – present  
Arthritis Research & Therapy: Review board, 2011 – present  
Journal of Biomedical Materials Research: Part A: Review board, 2011 – present  
Orthopaedic Journal of Sports Medicine, 2018 – present  
Sports Health: Review board, 2013 – present

#### HOSPITAL COMMITTEES

Institutional Review Board, Rhode Island Hospital, 11/05 – 11/08  
Selya Research Award Committee, Rhode Island Hospital, 08/06 – 08/08  
Lifespan Seed Funding Grant Program Review Committee, Rhode Island Hospital, 2012

#### UNIVERSITY COMMITTEES

Brown University Conflict of Interest Review Board, Brown University, 3/19 – present  
Service Core Steering Committee member, Cardiopulmonary Vascular Biology (CPVB)  
Center of Biomedical Research Excellence, Brown University 09/23- present  
MRI Research Facility Executive Committee, Brown University, 09/12 – present  
Committee on Medical Faculty Appointments, Brown University, 09/12 – 06/15  
Frank and Levy Awards Committee, Brown University, 2011 – 2012  
Faculty Animal Users Committee, Brown University, 02/07 – 01/11  
Institutional Review Board, University of Vermont, 06/00 – 05/03  
Department of Orthopaedics and Rehabilitation Research Committee, University of  
Vermont, 1995 – 2003  
Post-doctoral Advisory Committee, Department of Orthopaedics & Rehabilitation,  
University of Vermont; 06/02 – 05/03

## MEMBERSHIP IN SOCIETIES

Orthopaedic Research Society; 1987 – present  
 American Society of Mechanical Engineers: 1988 – present  
 American Society of Biomechanics; 1992 – present  
 International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine;  
 2000 – present  
 American Orthopaedic Society for Sports Medicine: 2004 – present  
 Osteoarthritis Research Society International: 2008 – present  
 ACL Study Group: 2010 – present

## ORIGINAL PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. Kristiansen T, Fleming B, Neale G, Reinecke S, Pope MH. A comparative study of fracture gap motion in external fixation. *Clin Biomech.* 1987 Nov;2(4):191-5. PMID: [23915753](#).
2. Stein A, Fleming B, Pope MH, Howe JG. Total knee arthroplasty kinematics. An in vivo evaluation of four different designs. *J Arthroplasty.* 1988;3 Suppl:S31-6. PMID: [3199138](#).
3. Emery M, Rodgers MM, Boerman J, Fleming BC, Howe J, Pope M. Reliability of force/displacement measures in a clinical device designed to measure ligamentous laxity at the knee. *J Orthop Sports Phys Ther.* 1989;10(11):441-7. PMID: [18796944](#).
4. Fleming B, Paley D, Kristiansen T, Pope M. A biomechanical analysis of the Ilizarov external fixator. *Clin Orthop Relat Res.* 1989 Apr;(241):95-105. PMID: [2924484](#).
5. Paley D, Fleming B, Catagni M, Kristiansen T, Pope M. Mechanical evaluation of external fixators used in limb lengthening. *Clin Orthop Relat Res.* 1990 Jan;(250):50-7. PMID: [2293944](#).
6. Hazard RG, Reeves V, Weisman G, Fleming BC, Pope MH. Dynamic lifting capacity: The relationship between peak force and weight as an indicator of effort. *J Spinal Disord.* 1991 Mar;4(1):63-7. PMID: [1839668](#).
7. Pope MH, Stankewich CJ, Beynnon BD, Fleming BC. The effect of knee musculature on ACL strain in vivo. *J Electromyogr Kinesiol.* 1991 Sep;1(3):191-8. PMID: [20870509](#).
8. Howe JG, Johnson RJ, Kaplan MJ, Fleming B, Jarvinen M. Anterior cruciate ligament reconstruction using quadriceps patellar tendon graft. Part I. Long-term follow-up. *Am J Sports Med.* 1991 Sep-Oct;19(5):447-57. PMID: [1962708](#).
9. Kaplan MJ, Howe JG, Fleming B, Johnson RJ, Jarvinen M. Anterior cruciate ligament reconstruction using patellar tendon graft. Part II. A specific sports review. *Am J Sports Med.* 1991 Sep-Oct;19(5):447-57. PMID: [1962709](#).
10. Fleming B, Beynnon B, Howe J, McLeod W, Pope M. Effect of tension and placement of a prosthetic anterior cruciate ligament on the anteroposterior laxity of the knee. *J Orthop Res.* 1992 Mar;10(2):177-86. PMID: [1740735](#).
11. Beynnon BD, Howe JG, Pope MH, Johnson RJ, Fleming BC. Anterior cruciate ligament strain in vivo. The Sicot Muller Award Paper. *Int Orthop.* 1992;16(1):1-12. PMID: [1429785](#).

12. Halsey D, Fleming B, Kristiansen T, Pope MH, Krag M. External fixator pin design. *Clin Orthop Relat Res.* 1992 May;(278):305-12. PMID: [1563166](#).
13. Kaigle AM, Pope MH, Fleming BC, Hansson T. A method for the intravital measurement of interspinous kinematics. *J Biomech.* 1992 Apr;25(4):451-6. PMID: [1583023](#).
14. Fleming BC, Johnson RJ, Shapiro E, Nichols C, Howe JG, Pope MH. Clinical versus instrumented knee testing on autopsy specimens. *Clin Orthop Relat Res.* 1992 Sep;(282):196-207. PMID: [1516313](#).
15. Beynnon BD, Pope MH, Wertheimer CM, Johnson RJ, Fleming BC, Howe JG, Nichols CE. The effect of functional knee braces on anterior cruciate ligament strain in vivo. *J Biomech.* 1993 Jan;26(1):51-8. PMID: [1429785](#).
16. Fleming BC, Beynnon BD, Nichols CE, Johnson RJ, Pope MH. An in vivo comparison of anterior tibial translation and strain in the anteromedial band of the anterior cruciate ligament. *J Biomech.* 1993 Jan;26(1):51-8. PMID: [8423168](#).
17. Fleming B, Beynnon BD, Johnson RJ, McLeod WD, Pope MH. Isometric versus tension measurements: A comparison for the reconstruction of the anterior cruciate ligament. *Am J Sports Med.* 1993 Jan-Feb;21(1):82-8. PMID: [8427374](#).
18. Hazard R, Reeves V, Fenwick J, Fleming B, Pope M. Test-retest variation in lifting capacity and indices of subject effort. *Clin Biomech.* 1993 Jan;8(1):20-4. PMID: [23915825](#).
19. Fleming BC, Beynnon BD, Nichols CE, Renstrom P, Johnson RJ, Pope MH. An in vivo comparison between intraoperative isometric measurement and local elongation of the graft after reconstruction of the anterior cruciate ligament. *J Bone Joint Surg Am.* 1994 Apr;76(4):511-9. PMID: [8150818](#).
20. Beynnon BD, Johnson RJ, Fleming BC, Renstrom P, Nichols CE, Pope MH. The measurement of elongation of anterior cruciate ligament grafts in vivo. *J Bone Joint Surg Am.* 1994 Apr;76(4):520-31. PMID: [8150819](#).
21. Fleming BC, Beynnon BD, Tohyama H, Johnson RJ, Nichols CE, Renstrom P, Pope MH. The determination of a zero strain reference for the anteromedial band of the anterior cruciate ligament. *J Orthop Res.* 1994 Nov;12(6):789-95. PMID: [7983554](#).
22. Beynnon BD, Fleming BC, Johnson RJ, Nichols CE, Renstrom PA, Pope MH. Anterior cruciate ligament strain behavior during rehabilitation exercises in vivo. **Winner of the 1993 Albert Trillat Young Investigator Award.** *Am J Sports Med.* 1995 Jan-Feb;23(1):24-34. PMID: [7726347](#).
23. Tohyama H, Beynnon BD, Renstrom PA, Theis MJ, Fleming BC, Pope MH. Biomechanical analysis of the ankle anterior drawer test for anterior talofibular ligament injuries. *J Orthop Res.* 1995 Jul;13(4):609-14. PMID: [7674077](#).
24. Beynnon B, Yu J, Huston D, Fleming B, Johnson R, Haugh L, Pope MH. A sagittal plane model of the knee and cruciate ligaments with application of a sensitivity analysis. *J Biomech Eng.* 1996 May;118(2):227-39. PMID: [8738789](#).
25. Beynnon BD, Risberg MA, Tjomsland O, Ekeland A, Fleming BC, Peura GD, Johnson RJ. Evaluation of knee joint laxity and the structural properties of the anterior cruciate ligament graft in the human. A case report. *Am J Sports Med.* 1997 Mar-Apr;25(2):203-6. PMID: [9079174](#).
26. Beynnon BD, Johnson RJ, Fleming BC, Peura GD, Renstrom PA, Nichols CE, Pope MH. The effect of functional knee bracing on the anterior cruciate ligament

- in the weight bearing and non-weight bearing knee. Am J Sports Med. 1997 May-Jun;25(3):353-9. PMID: [9167816](#).
27. Beynnon BD, Johnson RJ, Fleming BC, Stankewich CJ, Renstrom PA, Nichols CE. The strain behavior of the anterior cruciate ligament during squatting and active flexion-extension. A comparison of an open and a closed kinetic chain exercise. **Winner of the 1996 AOSSM O'Donoghue Sports Injury Research Award.** Am J Sports Med. 1997 Nov-Dec;25(6):823-9. PMID: [9397272](#).
  28. Fleming BC, Beynnon BD, Renstrom PA, Peura GD, Nichols CE, Johnson RJ. The strain behavior of the anterior cruciate ligament during bicycling. An in vivo study. **Winner of the 1997 Albert Trillat Young Investigator Award.** Am J Sports Med. 1998 Jan-Feb;26(1):109-18. PMID: [9474411](#).
  29. Beynnon BC, Meriam CM, Ryder SH, Fleming BC, Johnson RJ. The effect of screw insertion torque on tendons fixed with spiked washers. Am J Sports Med. Jul-Aug 1998;26(4):536-9. PMID: [9689374](#).
  30. Fleming BC, Huston DR, Krag MH, Sugihara S. Pin force measurement in a halo-vest orthosis, in vivo. J Biomech. 1998 Jul;31(7):647-51. PMID: [9796687](#).
  31. Fleming BC, Beynnon BD, Renström PA, Johnson RJ, Nichol CE, Peura GD, Uh BS. The strain behavior of the anterior cruciate ligament during stair climbing: An in vivo study. Arthroscopy. 1999 Mar;15(2):185-91. PMID: [10210077](#).
  32. Fleming BC, Good L, Peura GD, Beynnon BD. Calibration and application of an intra-articular force transducer for the measurement of patellar tendon graft forces: An in situ evaluation. J Biomech Eng. 1999 Aug;121(4):393-8. PMID: [10464693](#).
  33. Fleming BC, Peura GD, Beynnon BD. Factors influencing the output of an implantable force transducer. J Biomech. 2000 Jul;33(7):889-93. PMID: [10831764](#).
  34. Reed BV, Ashikaga T, Fleming BC, Zimny NJ. Effects of ultrasound and stretch on knee ligament extensibility. J Orthop Sports Phys Ther. 2000 Jun;30(6):341-7. PMID: [10871146](#).
  35. Fleming BC, Krag MH, Huston DR, Sugihara S. Pin loosening in a halo-vest orthosis: a biomechanical study. Spine. 2000 Jun 1;25(11):1325-31. PMID: [10828912](#).
  36. Fleming BC, Renstrom PA, Beynnon BD, Engstrom B, Peura GD. The influence of functional knee bracing on the anterior cruciate ligament strain biomechanics in weight bearing and non-weight bearing knees. Am J Sports Med. 2000 Nov-Dec;28(6):815-24. PMID: [11101104](#).
  37. Fleming BC, Renstrom P, Beynnon BD, Engstrom B, Peura GD, Badger GJ. The effect of weight bearing and external loading on anterior cruciate ligament strain. **Winner of the 1999 ASB Post-Doctoral Award.** J Biomech. 2001 Feb;34(2):163-70. PMID: [11165279](#).
  38. Beynnon BD, Uh BS, Johnson RJ, Fleming BC, Renstrom PA, Nichols CE. The elongation behavior of the anterior cruciate ligament graft in vivo. A long-term follow-up study. Am J Sports Med. 2001 Mar-Apr;29(2):161-6. PMID: [11292040](#).
  39. Fleming BC, Abate JA, Peura GD, Beynnon BD. The relationship between graft tensioning and the anterior-posterior laxity in the anterior cruciate ligament reconstructed goat knee. J Orthop Res. 2001 Sep;19(5):841-4. PMID: [11562130](#).



40. Fleming BC, Peura GD, Abate JA, Beynnon BD. Accuracy and repeatability of Roentgen stereophotogrammetric analysis (RSA) for measuring knee laxity in ongitudinal studies. *J Biomech.* 2001 Oct;34(10):1355-9. PMID: [11522316](#).
41. Fleming BC, Renstrom PA, Ohlen G, Johnson RJ, Peura GD, Beynnon BD, Badger GJ. The gastrocnemius muscle is an antagonist of the anterior cruciate ligament. *J Orthop Res.* 2001 Nov;19(6):1178-84. PMID: [11781021](#).
42. Uh BS, Beynnon BD, Churchill DL, Haugh LD, Risberg MA, Fleming BC. A new device to measure knee laxity during weight bearing and non-weight bearing conditions. *J Orthop Res.* 2001 Nov;19(6):1185-91. PMID: [11781022](#).
43. Beynnon BD, Fleming BC, Labravich R, Parsons B. Chronic anterior cruciate ligament deficiency is associated with increased anterior translation of the tibia during the transition from non-weight bearing to weight bearing. *J Orthop Res.* 2002 Mar;20(2):332-7. PMID: [11918313](#).
44. Fleming BC, Brattbakk B, Peura GD, Badger GJ, Beynnon BD. Measurement of anterior-posterior knee laxity: a comparison of three techniques. *J Orthop Res.* 2002 May;20(3):421-6. PMID: [12038613](#).
45. Beynnon BD, Johnson RJ, Fleming BC, Kannus P, Kaplan M, Samani J, Renstrom P. Anterior cruciate ligament replacement: comparison of bone-patellar tendon-bone grafts with two-strand hamstring grafts. A prospective, randomized study. *J Bone Joint Surg Am.* 2002 Sep;84(9):1503-13. PMID: [12208905](#).
46. Beynnon BD, Fleming BC, Churchill DL, Brown DS. The effect of anterior cruciate ligament deficiency and functional bracing on translation of the tibia relative to the femur during non-weight bearing and weight bearing. *Am J Sports Med.* 2003 Jan-Feb;31(1):99-105. PMID: [12531765](#).
47. Fleming BC, Ohlen G, Renstrom PA, Peura GD, Beynnon BD, Badger GJ. The effects of compressive load and knee joint torque on peak anterior cruciate ligament strains. *Am J Sports Med.* 2003 Sep-Oct;31(5):701-7. PMID: [12975189](#).
48. Heijne A, Fleming BC, Renstrom P, Peura GD, Werner S, Beynnon BD. Strain on the anterior cruciate ligament during closed kinetic chain exercises. *Med Sci Sports Exerc.* 2004 Jun;36(6):935-41. PMID: [15179161](#).
49. Beynnon BD, Uh BS, Fleming BC, Renstrom P, Roos H, Poole RA, Johnson RJ. Rehabilitation after anterior cruciate ligament reconstruction: A prospective, randomized, double-blind comparison of programs administered over 2 different time intervals. **Winner of the 2005 O'Donoghue Sports Injury Award. Winner of the 2006 Hughston Award.** *Am J Sports Med.* 2005 Mar;33(3):347-59. PMID: [15716250](#).
50. Walsh EF, DaSilva M, Fleming BC, Akelman E. Thumb carpometacarpal arthroscopy: A topographic, anatomic study of the thenar portal. *J Hand Surg Am.* 2005 Mar;30(2):373-9. PMID: [15781362](#).
51. Coughlin KM, Peura GD, Fleming BC, Hallock S, Beynnon BD. In vivo loads in the medial compartment of the rabbit knee. *Clin Biomech.* 2005 Nov;20(9):1007-9. PMID: [16099082](#).
52. Roemhildt ML, Peura GD, Coughlin KM, Fleming BC, Beynnon BD. Material properties of articular cartilage in the rabbit tibial plateau. *J Biomech.* 2006;39(12):2331-7. PMID: [16168420](#); PMCID: [PMC2933407](#).
53. Langer P, Fadale P, Hulstyn M, Fleming B, Brady M. Survey of Orthopaedic and sports medicine physicians regarding use of medrol dosepak for sports injuries. *Arthroscopy.* 2006 Dec;22(12):1263-1269. PMID: [17157723](#).

54. Langer P, Nickisch F, Spenciner D, Fleming B, DiGiovanni CW. In vitro evaluation of the effect lateral process talar excision on ankle and subtalar joint stability. *Foot Ankle Int.* 2007 Jan;28(1):78-83. PMID: [17257543](#).
55. Brady MF, Bradley MP, Banerjee R, Fadale PD, Hulstyn MJ, Fleming BC. Effects of initial graft tension on the tibiofemoral compressive forces and joint position after anterior cruciate ligament reconstruction. *Am J Sports Med.* 2007 Mar;35(3):395-403. PMID: [17218659](#); PMCID: [PMC1859866](#).
56. Teeple E, Fleming BC, Mechrefe AP, Crisco JJ, Brady MF, Jay GD. Frictional properties of Hartley guinea pig knees with and without Proteolytic disruption of the articular surfaces. *Osteoarthritis Cartilage.* 2007 Mar;15(3):309-15. PMID: [17010648](#); PMCID: [PMC1994930](#).
57. Oksendahl HL, Fleming BC, Blanpied PR, Ritter M, Hulstyn MJ, Fadale PD. Intra-articular anesthesia and knee muscle response. *Clin Biomech.* 2007 Jun;22(5):529-36. PMID: [17350738](#); PMCID: [PMC1865115](#).
58. Crisco JJ, Blume J, Teeple E, Fleming BC, Jay GD. Assuming exponential decay by incorporating viscous damping improves the prediction of the coefficient of friction in pendulum tests of whole articular joints. *Proc Inst Mech Eng H.* 2007 Apr;221(3):325-33. PMID: [17539587](#).
59. Brody JM, Hulstyn MJ, Fleming BC, Tung GA. The meniscal roots: Gross anatomic correlation with 3-T MRI findings. *AJR Am J Roentgenol.* 2007 May;188(5):W446-50. PMID: [17449741](#).
60. Drewniak EI, Crisco JJ, Spenciner DB, Fleming BC. Accuracy of circular contact area measurements with thin-film pressure sensors. *J Biomech.* 2007;40(11):2569-72. PMID: [17270193](#).
61. Bowers ME, Tung GA, Fleming BC, Crisco JJ, Rey J. Quantification of meniscal volume by segmentation of 3T magnetic resonance images. *J Orthop Res.* 2008 Feb;26(2):231-7. PMID: [17868097](#); PMCID: [PMC2084402](#).
62. Tashjian RZ, Levanthal E, Spenciner DB, Green A, Fleming BC. Initial fixation strength of massive rotator cuff tears: In vitro comparison of single-row suture anchor and transosseous tunnel constructs. *Arthroscopy.* 2007 Jul;23(7):710-6. PMID: [17637405](#).
63. Le NA, Fleming BC. Measuring fixed charge density and mechanical properties of goat articular cartilage using indentation methods and biochemical analysis. *J Biomech.* 2008;41(3):715-20. PMID: [17991472](#); PMCID: [PMC2288547](#).
64. Teeple E, Fleming BC, Elsaid KA, Jay GD, Aslani K, Crisco JJ, Mechrefe AP. Coefficients of friction, lubricin, and cartilage damage in the anterior cruciate ligament-deficient guinea pig knee. *J Orthop Res.* 2008 Feb;26(2):231-7. PMID: [17868097](#); PMCID: [PMC2792715](#).
65. Bowers ME, Tung GA, Trihn N, Kimia BB, Leventhal EL, Crisco JJ, Fleming BC. Effects of ACL interference screws on articular cartilage volume and thickness measurements with 1.5 T and 3 T MRI. *Osteoarthritis Cartilage.* 2008 May;16(5):572-8. PMID: [17933559](#); PMCID: [PMC2424214](#).
66. Elsaid KA, Fleming BC, Oksendahl HL, Fadale PD, Hulstyn MJ, Shalvoy RM, Jay GD. Decreased lubricin concentrations and markers of joint inflammation in synovial fluids from patients with anterior cruciate ligament injury. *Arthritis Rheum.* 2008 Jun;58(6):1707-15. PMID: [18512776](#); PMCID: [PMC2789974](#).

67. Tocci SL, Tashjian RZ, Leventhal E, Spenciner DB, Green A, Fleming BC. Biomechanical evaluation of single row arthroscopic rotator cuff repair (ARCR) technique. *J Shoulder Elbow Surg.* Sep-Oct 2008;17(5):808-14. PMID: [18595743](#).
68. Bowers ME, Trinh N, Tung GA, Crisco JJ, Kimia BB, Fleming BC: Quantitative MR imaging using “LiveWire” to measure tibiofemoral articular cartilage thickness. *Osteoarthritis Cartilage.* 2008 Oct;16(10):1167-73. PMID: [18407529](#); PMCID: [PMC2570785](#).
69. Fleming BC, Carey JL, Spindler KP, Murray MM. Can suture repair of ACL transection restore normal anteroposterior laxity of the knee? An ex vivo study. *J Orthop Res.* 2008 Nov;26(11):1500-5. PMID: [18528857](#); PMCID: [PMC2790602](#).
70. Fleming BC, Brady MF, Bradley MP, Banerjee R, Hulstyn MJ, Fadale PD. Tibiofemoral compression force differences using laxity- and force-based initial graft tensioning techniques in the ACL reconstructed knee. *Arthroscopy.* 2008 Sep;24(9):1052-60. PMID: [18760214](#); PMCID: [PMC2638055](#).
71. Spindler KP, Murray MM, Carey J, Fleming BC. The use of platelets to affect functional healing of an anterior cruciate ligament (ACL) autograft in a caprine ACL reconstruction model. *J Orthop Res.* 2009 May;27(5):631-8. PMID: [19009602](#); PMCID: [PMC2752673](#).
72. Murray MM, Palmer M, Abreu E, Spindler KP, Zurakowski D, Fleming BC. Platelet-rich plasma alone is not sufficient to enhance suture repair of the ACL in skeletally immature animals: An in vivo study. *J Orthop Res.* 2009 May;27(5):639-45. PMID: [18991345](#); PMCID: [PMC2824566](#).
73. Fleming BC, Spindler KP, Palmer M, Magarian E, Murray MM. Collagen-platelet composites improve the biomechanical properties of healing ACL grafts in a porcine model. **Winner of the 2009 Cabaud Research Award.** *Am J Sports Med.* 2009 Aug;37(8):1554-63. PMID: [19336614](#); PMCID: [PMC2796133](#).
74. Oksendahl NL, Gomez N, Thomas CS, Badger GJ, Hulstyn MJ, Fadale PD, Fleming BC. Digital radiographic assessment of tibiofemoral joint space width: a variance component analysis. *J Knee Surg.* 2009 Jul;22(3):205-12. PMID: [19634723](#); PMCID: [PMC2790164](#).
75. Drewniak EI, Jay GD, Warman ML, Fleming BC, Crisco JJ. Comparison of two methods for calculating the frictional properties of articular cartilage using a simple pendulum and intact mouse knee joints. *J Biomech.* 2009 Aug 25;42(12):1996-9. PMID: [19632680](#); PMCID: [PMC2734508](#).
76. Elsaid KA, Machan JT, Waller K, Fleming BC, Jay GD. The impact of anterior cruciate ligament injury on lubricin metabolism and the effect of inhibiting TNF- $\alpha$  on chondroprotection in an animal model. *Arthritis Rheum.* 2009 Oct;60(10):2997-3006. PMID: [19790069](#); PMCID: [PMC2800051](#).
77. Joshi SM, Mastrangelo AN, Magarian EM, Fleming BC, Murray MM. Collagen-platelet composite enhances histologic healing of the ACL. *Am J Sports Med.* 2009 Dec;37(12):2401-10. PMID: [19940313](#); PMCID: [PMC2856313](#).
78. Fleming BC, Magarian E, Harrison S, Murray MM. Collagen Scaffold supplementation does not improve the functional properties of the repaired ACL. *J Orthop Res.* 2010 Jun;28(6):703-9. PMID: [20058276](#); PMCID: [PMC2858260](#).
79. Wei L, Fleming BC, Sun X, Teeple E, Wu W, Jay GD, Elsaid KA, Machan JT, Chen Q. A comparison of differential biomarkers of osteoarthritis with and without post traumatic injury in the Hartley guinea pig model. *J Orthop Res.* 2010 Jul;28(7):900-6. PMID: [20108346](#); PMCID: [PMC2875364](#).

80. Fleming BC, Oksendahl HL, Mehan WA, Portney R, Fadale PD, Hulstyn MJ, Bowers ME, Machan JT, Tung GA. Delayed gadolinium enhanced MRI of cartilage following ACL injury. *Osteoarthritis Cartilage*. 2010 May;18(5):662-7. PMID: [20188685](#); PMCID: [PMC2862790](#).
81. Miranda DL, Rainbow MJ, Leventhal E, Crisco JJ, Fleming BC. Automatic determination of standardized anatomical coordinate systems for three-dimensional bone models of the human knee. *J Biomech*. 2010 May 28;43(8):1623-6. PMID: [20167324](#); PMCID: [PMC2866785](#).
82. Jay GD, Fey T, Watkins B, Fleming BC, Zhang L, Teeple E, Waller W, Elsaid KA. Prevention of cartilage degeneration and restoration of chondroprotection by tribosupplementation in the rat following ACL transection. *Arthritis Rheum*. 2010 Aug;62(8):2382-91. PMID: [20506144](#); PMCID: [PMC2921027](#).
83. Bowers ME, Tung GA, Oksendahl HL, Hulstyn MJ, Fadale PD, Machan JT, Fleming BC. Quantitative magnetic resonance imaging detects changes in meniscal volume in vivo after partial meniscectomy. *Am J Sports Med*. 2010 Aug;38(8):1631-7. PMID: [20442327](#); PMCID: [PMC9214165](#).
84. Roemhildt ML, Coughlin KM, Peura GD, Badger GJ, Churchill D, Fleming BC, Beynnon BD. Effects of increased chronic loading on articular cartilage material properties in the lapine tibiofemoral joint. *Arthritis Rheum*. 2010 Aug;62(8):2382-91. PMID: [20506144](#); PMCID: [PMC2922428](#).
85. Murray MM, Magarian EM, Harrison SL, Zurakowski D, Fleming BC. The effect of skeletal maturity on functional healing of the anterior cruciate ligament. *J Bone Joint Surg Am*. 2010 Sep 1;92(11):2039-49. PMID: [20810854](#); PMCID: [PMC2924734](#).
86. Murray MM, Magarian E, Zurakowski D, Fleming BC. Bone-to-bone fixation enhances functional healing of the porcine anterior cruciate ligament. *Arthroscopy*. 2010 Sep;26(9 Suppl):S49-57. PMID: [20810092](#); PMCID: [PMC2936961](#).
87. Magarian EM, Fleming BC, Harrison SL, Mastrangelo AN, Badger GD, Murray MM. Delay of 2 or 6 weeks adversely effects the functional outcome of augmented primary repair of the porcine anterior cruciate ligament. *Am J Sports Med*. 2010 Dec;38(12):2528-34. PMID: [20855556](#); PMCID: [PMC2996471](#).
88. Teeple E, Elsaid KA, Jay GD, Zhang L, Badger GD, Akelman M, Bliss T, Fleming BC. The effects of supplemental intra-articular lubricin and hyaluronic acid on the progression of post-traumatic arthritis in the anterior cruciate ligament deficient rat knee. *Am J Sports Med*. 2011 Jan;39(1):164-72. PMID: [20855557](#); PMCID: [PMC3010331](#).
89. Tompkins M, Plante M, Monchik K, Fleming B, Fadale P. The use of a non-benzodiazapine hypnotic sleep-aid (Zolpidem) to reduce post-operative pain and fatigue in patient undergoing ACL reconstruction: A randomized controlled clinical trial. *Knee Surg Sports Traumatol Arthrosc*. 2011 Oct;19(10):1675-82. PMID: [21253706](#).
90. Mastrangelo AN, Vavken P, Fleming BC, Harrison SH, Murray MM. Reduced platelet concentration does not harm PRP effectiveness in a porcine in vivo model. *J Orthop Res*. 2011 Jul;29(7):1002-7. PMID: [21337615](#); PMCID: [PMC3094496](#).
91. Vavken P, Saad FA, Fleming BC, Murray MM. VEGF receptor expression by ACL fibroblasts affects functional healing of the ACL. *Knee Surg Sports*

- Traumatol Arthrosc. 2011 Oct;19(10):1675-82. PMID: [21331648](#); PMCID: [PMC3210695](#).
92. Tompkins M, Monchik K, Plante M, Fleming BC, Fadale PD. Contact area and pressure in suture bridge rotator cuff repair using knotless lateral anchors. Knee Surg Sports Traumatol Arthrosc. 2011 Oct;19(10):1788-93. PMID: [21468618](#).
  93. Fujiya H, Kousa P, Fleming BC, Churchill DL, Beynnon BD. Effect of muscle loads and torque applied to the tibia on the strain behavior of the anterior cruciate ligament: An in vitro investigation. Clin Biomech. 2011 Dec;26(10):1005-11. PMID: [21816523](#); PMCID: [PMC3205257](#).
  94. Fleming BC, Vajapeyam S, Connolly S, Magarian E, Murray MM. The use of magnetic resonance imaging to predict ACL graft structural properties. J Biomech. 2011 Nov 10;44(16):2843-6. PMID: [21962290](#); PMCID: [PMC3208804](#).
  95. Mulcahey MK, Monchik KO, Yongpravat C, Badger GD, Fadale PD, Hulstyn MJ, Fleming BC. Effects of single-bundle and double-bundle ACL reconstruction on tibiofemoral compressive stresses and knee kinematics during simulated squatting. Knee. 2012 Aug;19(4):469-76. PMID: [21696962](#); PMCID: [PMC3193548](#).
  96. Beynnon BD, Johnson RF, Naud S, Fleming BC, Abate JA, Brattbakk B, Nichols CE. Accelerated versus non-accelerated rehabilitation following anterior cruciate ligament reconstruction: A prospective, randomized, double-blind investigation evaluating knee joint laxity using roentgen stereophotogrammetric analysis. Am J Sports Med. 2011 Dec;39(12):2536-48. PMID: [21952714](#).
  97. Miranda DL, Schwartz JB, Loomis AC, Brainerd EL, Fleming BC, Crisco JJ. Static and dynamic error of a biplanar videoradiography system using marker-based and markerless tracking techniques. J Biomech Eng. 2011 Dec;133(12):121002. PMID: [22206419](#); PMCID: [PMC3267989](#).
  98. Proffen BL, McElfresh M, Fleming BC, Murray MM. A comparative anatomical study of the human knee and six animal species. Knee. 2012 Aug;19(4):493-9. PMID: [21852139](#); PMCID: [PMC3236814](#).
  99. Drewniak EI, Jay GD, Fleming BC, Zhang L, Warman ML, Crisco JJ. Cyclic loading increases friction and changes cartilage surface integrity in lubricin mutant mouse knees. Arthritis Rheum. 2012 Feb;64(2):465-73. PMID: [21905020](#); PMCID: [PMC3252402](#).
  100. Jay GD, Elsaid KA, Kelly KA, Anderson SC, Zhang L, Teeple E, Waller K, Fleming BC. Prevention of cartilage degeneration and gait asymmetry by lubricin tribosupplementation in the rat following ACL transection. Arthritis Rheum. 2012 Apr;64(4):1162-71. PMID: [22127873](#); PMCID: [PMC3297696](#).
  101. Vavken P, Fleming BC, Mastrangelo AN, Machan JT, Murray MM. Biomechanical outcomes after bio-enhanced ACL repair and ACL reconstruction are equal in a porcine model. Arthroscopy. 2012 May;28(5):672-80. PMID: [22261137](#); PMCID: [PMC3340462](#).
  102. Wei F, Zhou J, Wei X, Zhang J, Fleming BC, Terek R, Pei M, Chen Q, Liu T, Wei L. Activation of Indian Hedgehog promotes chondrocyte hypertrophy and upregulation of MMP-13 in human osteoarthritic cartilage. Osteoarthritis Cartilage. 2012 Jul;20(7):755-63. PMID: [22469853](#); PMCID: [PMC3374008](#).
  103. Elsaid KA, Zhang L, Waller K, Tofte J, Teeple E, Fleming BC, Jay GD. The impact of forced joint exercise on lubricin biosynthesis from articular cartilage



- following ACL transection and intra-articular lubricin's effect in exercised joints following ACL transection. *Osteoarthritis Cartilage*. 2012 Aug;20(8):940-8. PMID: [22579916](#).
104. Waller KA, Zhang LX, Fleming BC, Jay GD. Preventing friction induced chondrocyte apoptosis: A comparison of human synovial fluid and Hyal G-F 20. *J Rheumatol*. 2012 Jul;39(7):1473-80. PMID: [22660808](#); PMCID: [PMC3605976](#).
  105. Miranda DL, Rainbow MJ, Crisco JJ, Fleming BC. Kinematic differences between optical motion capture and biplanar videoradiography during a jump-cut maneuver. *J Biomech*. 2013 Feb 1;46(3):567-73. PMID: [23084785](#); PMCID: [PMC3551998](#).
  106. Akelman M, Teeple E, Machan J, Crisco JJ, Jay GD, Fleming BC. Pendulum mass affects the measurement of articular friction coefficient. *J Biomech*. 2013 Feb 1;46(3):615-8. PMID: [23122223](#); PMCID: [PMC3551997](#).
  107. Fleming BC, Fadale PD, Hulstyn MJ, Shalvoy RM, Oksendahl HL, Badger GD, Tung GA. The effect of initial graft tension after anterior cruciate ligament reconstruction: A randomized clinical trial with 36-month follow-up. *Am J Sports Med*. 2013 Jan;41(1):25-34. PMID: [23144370](#); PMCID: [PMC3534813](#).
  108. Miranda DL, Fadale PD, Hulstyn MJ, Shalvoy RM, Machan JT, Fleming BC. Knee biomechanics during a jump-cut maneuver: Effects of sex & ACL surgery. *Med Sci Sports Exerc*. 2013 May;45(5):942-51. PMID: [23190595](#); PMCID: [PMC3594620](#).
  109. Vavken P, Fleming BC, Machan JT, Murray MM. Effects of suture choice on biomechanics and physeal status after bio-enhanced anterior cruciate ligament repair in skeletally immature patients: A large animal study. *Arthroscopy*. 2013 Jan;29(1):122-32. PMID: [23200845](#); PMCID: [PMC3644616](#).
  110. Biercevicz AM, Miranda DL, Machan JT, Murray MM, Fleming BC In situ non-invasive T2\*weighted MRI derived parameters predict ex vivo structural properties of an ACL reconstruction or bio-enhanced primary repair in a porcine model. *Am J Sports Med*. 2013 Mar;41(3):560-6. PMID: [23348076](#); PMCID: [PMC3593999](#).
  111. Waller KA, Zhang LX, Elsaid KA, Aslani K, Warman ML, Fleming BC, Jay GD. The role of lubricin and boundary lubrication in the prevention of chondrocyte apoptosis. *Proc Natl Acad Sci U S A*. 2013 Apr 9;110(15):5852-7. PMID: [23530215](#); PMCID: [PMC3625316](#).
  112. Murray MM, Fleming BC. Use of a collagen-platelet composite to stimulate anterior cruciate ligament healing also minimizes post-traumatic osteoarthritis after ACL surgery. **Winner of the 2013 Cabaud Research Award**. *Am J Sports Med*. 2013 Aug;41(8):1762-70. PMID: [23857883](#); PMCID: [PMC3735821](#).
  113. Rainbow MJ, Miranda DL, Cheung RTH, Schwartz JB, Crisco JJ, Davis IS, Fleming BC. Automatic Determination of an Anatomical Coordinate System for a Three-Dimensional Model of the Human Patella. *J Biomech*. 2013 Aug 9;46(12):2093-6. PMID: [23791087](#); PMCID: [PMC3729621](#).
  114. Coats-Thomas MS, Miranda DL, Badger GJ, Fleming BC. Effects of ACL reconstruction surgery on muscle activity of the lower limb during a jump-cut maneuver in males and females. *J Orthop Res*. 2013 Dec;31(12):1890-6. PMID: [23966333](#); PMCID: [PMC3808517](#).
  115. Haslauer CM, Elsaid KA, Fleming BC, Proffen BL, Johnson VM, Murray MM. Loss of extracellular matrix from articular cartilage is mediated by the synovium

- and ligament after anterior cruciate ligament injury. *Osteoarthritis Cartilage*. 2013 Dec;21(12):1950-7. PMID: [24036379](#); PMCID: [PMC3917322](#).
116. Proffen BL, Fleming BC, Murray MM. Histologic predictors of maximum failure loads differ between the healing ACL and ACL grafts after 6 and 12 Months in vivo. *Orthop J Sports Med*. 2013 Nov;1(6):2325967113512457. PMID: [25343145](#); PMCID: [PMC4203461](#).
  117. Biercevicz AM, Murray MM, Walsh EG, Miranda DL, Machan JT, Fleming BC. T<sub>2</sub>\* MR relaxometry and ligament volume are associated with the structural properties of the healing ACL. *J Orthop Res*. 2014 Apr;32(4):492-9. PMID: [24338640](#); PMCID: [PMC3946219](#).
  118. Zhou J, Chen Q, Lanske B, Fleming BC, Terek R, Wei X, Zhang G, Wang S, Li K, Wei L. Disrupting the Indian hedgehog signaling pathway in vivo attenuates surgically induced osteoarthritis progression in Col2a1-CreER<sup>T2</sup>;Ihh<sup>fl/fl</sup> mice. *Arthritis Res Ther*. 2014 Jan 15;16(1):R11. PMID: [24428864](#); PMCID: [PMC3978435](#).
  119. Wang S, Wei X, Zhou J, Zhang J, Li K, Chen Q, Terek R, Fleming BC, Goldring MB, Ehrlich MG, Zhang G, Wei L. Identification of Alpha 2 Macroglobulin (A2M) as a master inhibitor to attenuate post-traumatic osteoarthritis cartilage degeneration. *Arthritis Rheumatol*. 2014 Jul;66(7):1843-53. PMID: [24578232](#); PMCID: [PMC4187342](#).
  120. Zhang C, Wei X, Chen C, Cao K, Li Y, Jiao Q, Ding J, Zhou J, Fleming BC, Chen Q, Wei L. Indian hedgehog in synovial fluid is a novel marker for early cartilage lesions in human knee joint. *Int J Mol Sci* 2014 Apr 28;15(5):7250-65. PMID: [24786088](#); PMCID: [PMC4057670](#).
  121. Biercevicz AM, Walsh EG, Murray MM, Akelman MR, Fleming BC. Improving the clinical efficiency of T<sub>2</sub>\* mapping of ligament integrity. *J Biomech*. 2014 Jul 18;47(10):2522-5. PMID: [24792580](#); PMCID: [PMC4057958](#).
  122. Fleming BC, Proffen BL, Vavken P, Shalvoy MR, Machan JT, Murray MM. Increased platelet concentration does not improve functional graft healing in bio-enhanced ACL reconstruction. *Knee Surg Sports Traumatol Arthrosc* 2015 Apr;23(4):1161-70. PMID: [24633008](#); PMCID: [PMC4167989](#).
  123. Biercevicz AM, Akelman MR, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Tung GA, Oksendahl HL, Fleming BC. MRI Volume and signal intensity of the ACL graft predicts clinical, functional and patient-oriented outcome measures following ACL reconstruction. *Am J Sports Med*. 2015 Mar;43(3):693-9. PMID: [25540298](#); PMCID: [PMC4344859](#).
  124. Kiapour A, Shalvoy MR, Murray MM, Fleming BC. Validation of porcine knee as a sex-specific model to study human anterior cruciate ligament disorders. *Clin Orthop Relat Res*. 2015 Feb;473(2):639-50. PMID: [25269532](#); PMCID: [PMC4294889](#).
  125. Proffen BL, Vavken P, Haslauer CM, Fleming BC, Harris C, Machan JT, Murray MM. Addition of autologous mesenchymal stem cells to whole blood for bio-enhanced ACL repair has no benefit in the porcine model. *Am J Sports Med*. 2015 Feb;43(2):320-30. PMID: [25549633](#); PMCID: [PMC4511104](#).
  126. Jones MH, Spindler KP, Fleming BC, Duryea J, Obuchowski NA, Scaramuzza EA, Oksendahl HL, Winalski CS, Duong CL, Huston LJ, Parker RD, Kaeding CC, Andrish JT, Flanigan DC, Dunn WR, Reinke EK. Meniscus treatment and age predict narrower radiographic joint space width 2 years after ACL

- reconstruction: Data from the MOON onsite cohort. Osteoarthritis Cartilage. 2015 Apr;23(4):581-8. PMID: [25559582](#); PMCID: [PMC4601556](#).
127. Proffen BL, Perrone GS, Fleming BC, Sieker JT, Kramer J, Hawes ML, Badger GJ, Murray MM. Electron beam sterilization does not have a detrimental effect on the ability of extracellular matrix scaffolds to support in vivo ligament healing. J Orthop Res. 2015 Jul;33(7):1015-23. PMID: [25676876](#); PMCID: [PMC4517185](#).
  128. Biercevicz AM, Akelman MR, Rubin LE, Walsh EG, Merck D, Fleming BC. The uncertainty of predicting intact anterior cruciate ligament degeneration in terms of structural properties using T2\* relaxometry in a human cadaveric model. J Biomech. 2015 Apr 13;48(6):1188-92. PMID: [25746575](#); PMCID: [PMC4380590](#).
  129. Thomas NP, Li P, Fleming BC, Chen Q, Wei SC, Pan XH, Li G, Wei L. Attenuation of cartilage pathogenesis in post-traumatic osteoarthritis (PTOA) in mice by blocking the stromal derived factor 1 receptor (CXCR4) with the specific inhibitor, AMD3100. J Orthop Res. 2015 Jul;33(7):1071-8. PMID: [25732515](#); PMCID: [PMC4557642](#).
  130. Kiapour A, Fleming BC, Murray MM. Biomechanical outcomes of bridge-enhanced anterior cruciate ligament repair are influenced by sex in a preclinical model: A pre-clinical study. Clin Orthop Relat Res. 2015 Aug;473(8):2599-608. PMID: [25742916](#); PMCID: [PMC4488214](#).
  131. Biercevicz AM, Proffen BL, Murray MM, Walsh EG, Fleming BC. T2\* relaxometry and volume predict semi-quantitative histological scoring of an ACL bridge-enhanced primary repair in a porcine model. J Orthop Res. 2015 Aug;33(8):1180-7. PMID: [25764143](#); PMCID: [PMC4497917](#).
  132. Kiapour AM, Fleming BC, Proffen BL, Murray MM. Sex influences the biomechanical outcomes of anterior cruciate ligament reconstruction in a pre-clinical large animal model. Am J Sports Med. 2015 Jul;43(7):1623-31. PMID: [25939612](#); PMCID: [PMC4490080](#).
  133. Teeple E, Aslani K, Shalvoy MR, Medrano JE, Zhang L, Machan JT, Fleming BC, Jay GD. Lubricin deficiency in the murine lumbar intervertebral disc results in elevated torsional apparent modulus. J Biomech. 2015 Jul 16;48(10):2210-3. PMID: [25907550](#); PMCID: [PMC4492848](#).
  134. Proffen BL, Perrone GS, Fleming BC, Sieker JT, Kramer J, Hawes ML, Badger GJ, Murray MM. Effect of low temperature ethylene oxide and electron beam sterilization on the in vitro and in vivo function of reconstituted extracellular matrix-derived scaffolds. J Biomater Appl. 2015 Oct;30(4):435-49. PMID: [26088294](#); PMCID: [PMC4670802](#).
  135. Du G, Zhan H, Ding D, Wang S, Wei X, Wei F, Zhang J, Bilgen B, Reginato A, Fleming BC, Deng J, Wei L. Abnormal mechanical loading induces cartilage degeneration by accelerating meniscus hypertrophy and mineralization after ACL injury in vivo. Am J Sports Med. 2016 Mar;44(3):652-63. PMID: [26792705](#); PMCID: [PMC4775287](#).
  136. Proffen BL, Sieker JT, Murray MM, Akelman MR, Chin KE, Perrone GS, Patel TK, Fleming BC. Extracellular matrix-blood composite injection reduces post-traumatic osteoarthritis after anterior cruciate ligament injury in the rat. J Orthop Res. 2016 Jun;34(6):995-1003. PMID: [26629963](#); PMCID: [PMC4882220](#).
  137. Christino MA, Fleming BC, Machan JT, Shalvoy RM. Psychological factors associated with ACL reconstruction recovery. Orthop J Sports Med. 2016 Mar 23;4(3):2325967116638341. PMID: [27069948](#); PMCID: [PMC4811017](#).



138. Akelman MR, Fadale PD, Hulstyn MJ, Shalvoy RM, Garcia A, Chin KE, Duryea J, Badger GJ, Tung GA, Fleming BC. Effect of matching or over-constraining knee laxity during ACL reconstruction on knee osteoarthritis and clinical outcomes: A randomized controlled trial with 84-month follow-up. *Am J Sports Med.* 2016 Jul;44(7):1660-70. PMID: [27159308](#); PMCID: [PMC4930731](#).
139. Teeple E, Karamchedu NP, Larson K, Zhang LX, Badger GJ, Fleming BC, Jay GD. Arthroscopic irrigation of the bovine stifle joint increases cartilage surface friction and decreases superficial zone lubricin. *J Biomech.* 2016 Sep 6;49(13):3106-3110. PMID: [27511596](#); PMCID: [PMC5056145](#).
140. Chin KE, Karamchedu NP, Patel TK, Badger GJ, Akelman MR, Moore DC, Proffen BL, Murray MM, Fleming BC. Comparison of micro-CT post-processing methods for evaluating the trabecular bone volume fraction in a rat ACL-transection model. *J Biomech.* 2016 Oct 3;49(14):3559-3563. PMID: [27594677](#); PMCID: [PMC5074884](#).
141. Murray MM, Flutie BM, Kalish LA, Ecklund K, Fleming BC, Proffen BL, Micheli LJ. The Bridge-Enhanced ACL Repair (BEAR) procedure: An early feasibility cohort study. *Orthop J Sports Med.* 2016 Nov 21;4(11):2325967116672176. PMID: [27900338](#); PMCID: [PMC5120682](#).
142. Larson KM, Zhang L, Elsaid KA, Schmidt TA, Fleming BC, Badger GJ, Jay GD. Reduction of friction by recombinant human proteoglycan 4 in IL-1 $\alpha$  stimulated bovine cartilage explants. *J Orthop Res.* 2017 Mar;35(3):580-589. PMID: [27411036](#); PMCID: [PMC5957283](#).
143. Waller KA, Chin KE, Jay GD, Zhang LX, Teeple E, McAllister S, Badger GJ, Schmidt TA, Fleming BC. Intra-articular recombinant human Proteoglycan 4 mitigates cartilage damage following destabilization of the medial meniscus in the Yucatan minipig. *Am J Sports Med.* 2017 Jun;45(7):1512-1521. PMID: [28129516](#); PMCID: [PMC5453820](#).
144. Beveridge JE, Walsh EG, Murray MM, Fleming BC. Sensitivity of ACL volume and T2\* relaxation time to magnetic resonance imaging scan conditions. *J Biomech.* 2017 May 3;56:117-121. PMID: [28359570](#); PMCID: [PMC5476923](#).
145. Sieker JT, Proffen BL, Waller KA, Chin K, Karamchedu NP, Akelman MR, Perrone GS, Kiapour AM, Konrad J, Murray MM, Fleming BC. Transcriptional profiling of articular cartilage in a porcine model of early post-traumatic osteoarthritis. *J Orthop Res.* 2018 Jan;36(1):318-329. PMID: [28671352](#); PMCID: [PMC5752630](#).
146. Kiapour AM, Fleming BC, Murray MM. Structural and anatomic restoration of the anterior cruciate ligament is associated with less cartilage damage one year after surgery. *Orthop J Sports Med.* 2017 Aug 28;5(8):2325967117723886. PMID: [28875154](#); PMCID: [PMC5576541](#).
147. Nabil M, Duryea J, Badger JG, Akelman MR, Jones MH, Spindler KP, Fleming BC. Comparison of 2 radiographic joint space width measurement techniques for the tibiofemoral joint. *Orthop J Sports Med.* 2017 Sep 26;5(9):2325967117728675. PMID: [28989937](#); PMCID: [PMC5624356](#).
148. Thomas NP, Wu WJ, Fleming BC, Wei F, Chen Q, Wei L. Synovial inflammation plays a greater role in post-traumatic osteoarthritis compared to idiopathic osteoarthritis in the Hartley guinea pig knee. *BMC Musculoskelet Disord.* 2017 Dec 29;18(1):556. PMID: [29284451](#); PMCID: [PMC5747041](#).

149. Beveridge JE, Machan JT, Walsh EG, Kiapour AM, Karamchedu NP, Chin KE, Proffen BL, Sieker JT, Murray MM, Fleming BC. Magnetic resonance measurements of tissue quantity and quality using T2\* relaxometry predict temporal changes in the biomechanical properties of the healing ACL. *J Orthop Res*. 2018 Jun;36(6):1701-1709. PMID: [29227559](#); PMCID: [PMC5995620](#).
150. Jones MH, Reinke E, Andrish JT, Dunn W, Duong CL, Duryea J, Flanigan D, Fleming BC, Huston LJ, Kaeding CC, Obuchowski NA, Oksendahl HL, Parker RD, Scaramuzza EA, Winalski CS, Spindler KP. Differences in lateral compartment joint space width after ACL reconstruction: Data from the MOON Onsite Cohort. *Am J Sports Med*. 2018 Mar;46(4):876-882. PMID: [29394877](#); PMCID: [PMC60163880](#).
151. Ware JK, Owens BD, Akelman MR, Karamchedu NP, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Fleming BC. Preoperative KOOS and SF36 are associated with the development of symptomatic knee osteoarthritis at 7 years following ACL reconstruction. *Am J Sports Med*. 2018 Mar;46(4):869-875. PMID: [29401408](#); PMCID: [PMC5854525](#).
152. Sieker JT, Proffen BL, Waller KA, Chin KE, Karamchedu NP, Akelman MR, Perrone GS, Kiapour AM, Konrad J, Fleming BC, Murray MM. Transcriptional profiling of synovium in a porcine model of early post-traumatic osteoarthritis. *J Orthop Res*. 2018 Aug;36(8):2128-2139. PMID: [29460983](#); PMCID: [PMC6102098](#).
153. DeFroda SF, Karamchedu NP, Owens BD, Bokshan SL, Sullivan K, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Fleming BC. Tibial tunnel widening following anterior cruciate ligament reconstruction: A retrospective 7-year study evaluating the effects of initial graft tensioning and graft selection. *Knee*. 2018 Dec;25(6):1107-1114. PMID: [30414786](#); PMCID: [PMC6286238](#).
154. Kiapour AM, Yang D, Badger GJ, Karamchedu MP, Murray MM, Fadale PD, Hulstyn MJ, Shalvoy RM, Fleming BC. Anatomical features of the tibial plateau predict outcomes of ACL reconstruction within 7 years after surgery. *Am J Sports Med*. 2019 Feb;47(2):303-311. PMID: [30640519](#); PMCID: [PMC6382545](#).
155. Kiapour AM, Sieker JT, Proffen BL, Lam TT, Fleming BC, Murray MM. Synovial fluid proteome changes in ACL injury-induced posttraumatic osteoarthritis: Proteomics analysis of porcine knee synovial fluid. *PLoS One*. 2019 Mar 1;14(3):e0212662. PMID: [30822327](#); PMCID: [PMC6396923](#).
156. Murray MM, Kalish LA, Fleming BC, BEAR Trial Team, Proffen BL, Ecklund K, Kramer DE, Yen YM, Micheli LJ. Bridge-enhanced anterior cruciate ligament repair (BEAR) procedure: Two-year results of a first-in-human study. **Winner of the 2020 William A. Grana Award for Best Original Research.** *Orthop J Sports Med*. 2019 Mar 22;7(3):2325967118824356. PMID: [30923725](#); PMCID: [PMC6431773](#).
157. Murray MM, Kiapour AM, Kalish LA, Ecklund K, BEAR Trial Team, Fleming BC. Predictors of healing ligament size and MR signal intensity at 6 months after bridge-enhanced ACL repair. *Am J Sports Med*. 2019 May;47(6):1361-1369. PMID: [30986359](#); PMCID: [PMC6497549](#).
158. Kiapour AM, Ecklund K, Murray MM, BEAR Trial Team, Fleming BC. Changes in cross-sectional area and signal intensity of healing ACLs and ACL grafts in the first two years after surgery. *Am J Sports Med*. 2019 Jul;47(8):1831-1843. PMID: [31166701](#); PMCID: [PMC6599545](#).

159. Beveridge JE, Proffen BL, Karamchedu NP, Chin KE, Sieker JT, Badger, GJ, Kiapour AM, Murray MM, Fleming BC. Cartilage damage is related to ACL stiffness in a porcine model of ACL repair. *J Orthop Res*. 2019 Oct;37(10):2249-2257. PMID: [31125133](#); PMCID: [PMC6739195](#).
160. Jones MH, Oak S, Andrish JT, Brophy RH, Cox CL, Dunn WR, Flanigan DC, Fleming BC, Huston LJ, Kaeding CC, Kolosky M, Kuyumcu G, Lynch TS, Magnussen RA, Matava MJ, Parker RD, Reinke EK, Scaramuzza EA, Smith MV, Winalski C, Wright RW, Zajichek A, Spindler KP. Predictors of radiographic osteoarthritis 2-3 years after ACL reconstruction: Data from the MOON onsite nested cohort. *Orthop J Sports Med*. 2019 Aug 30;7(8):2325967119867085. PMID: [31516911](#); PMCID: [PMC6719483](#).
161. Newberry, J, Adler C, Desai S, Li N, Ortega J, Fleming BC, Jayasuriya CT. SDF-1 preconditioned HPC scaffolds mobilize cartilage-derived progenitors and stimulate meniscal fibrocartilage repair in human explant tissue culture. *Connect Tissue Res*. 2020 May-Jul;61(3-4):338-348. PMID: [31744353](#); PMCID: [PMC7190451](#).
162. Ayturk UM, Sieker JT, Haslauer CM, Proffen BL, Weissenberger MH, Warman ML, Fleming BC, Murray MM. Proteolysis and cartilage development are activated in the synovium after surgical induction of post-traumatic osteoarthritis. *PLoS One*. 2020 Feb 27;15(2):e0229449. PMID: [32107493](#); PMCID: [PMC7046188](#).
163. Murray MM, Fleming BC, Badger GJ, BEAR Trial Team, Kramer DE, Micheli L, Yen Y-M. Bridge-enhanced ACL repair is non-inferior to autograft ACL reconstruction at 2-years: Results of a prospective randomized clinical trial. **Winner of the 2020 O'Donoghue Award of the American Orthopaedic Society for Sports Medicine**. *Am J Sports Med*. 2020 May;48(6):1305-1315. PMID: [32298131](#); PMCID: [PMC7227128](#).
164. Freiburger C, Kiapour AM, Liu S, Bear Trial Team, Henderson RN, Barnett S, Sant NJ, Proffen BL, Fleming BC, Ecklund K, Kramer DE, Micheli LJ, Murray MM. Higher physiologic platelet counts in whole blood are not associated with improved ACL cross-sectional area or signal intensity 6 months after bridge-enhanced ACL repair. *Orthop J Sports Med*. 2020 Jul 1;8(7):2325967120927655. PMID: [32656289](#); PMCID: [PMC7331772](#).
165. Barnett S, Badger GJ, Kiapour AM, Yen Y-M, Henderson R, Freiburger C, Proffen B, Sant N, Trainer B, Fleming BC, Micheli LJ, Murray MM, Kramer DE. Females have earlier muscle strength and functional recovery after bridge-enhanced ACL repair. *Tissue Eng Part A*. 2020 Jul;26(13-14):702-711. PMID: [32589515](#); PMCID: [PMC7398430](#).
166. Behnke AL, Parola L, Karamchedu NP, Badger GJ, Fleming BC, Beveridge JE. Neuromuscular function in anterior cruciate ligament reconstructed patients at long-term follow-up. *Clin Biomech*. 2021 Jan;81:105231. PMID: [33246796](#); PMCID: [PMC7855572](#).
167. DeFroda SF, Karamchedu NP, Budacki R, Wiley T, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Fleming BC, Owens BD. Evaluation of graft tensioning effects in anterior cruciate ligament reconstruction between hamstring and bone-patellar tendon bone autografts. *J Knee Surg*. 2021 Jun;34(7):777-783. PMID: [31962350](#); PMCID: [PMC6286238](#).

168. Flannery SW, Kiapour AM, Edgar DJ, Murray MM, Fleming BC. Automated magnetic resonance image segmentation of the anterior cruciate ligament. *J Orthop Res*. 2021 Apr;39(4):831-840. PMID: [33241856](#); PMCID: [PMC8005419](#).
169. Karamchedu NP, Murray MM, Sieker JT, Proffen BL, Portilla G, Costa MQ, Molino J, Fleming BC. Bridge-enhanced ACL repair leads to greater offloading of the surgical knee and less cartilage damage in the porcine ACL transection model. *Am J Sports Med*. 2021 Mar;49(3):667-674. PMID: [33534613](#); PMCID: [PMC8099149](#).
170. Flannery SW, Kiapour AM, Edgar DJ, Murray MM, Beveridge JE, Fleming BC. A transfer learning approach for automatic segmentation of the surgically treated anterior cruciate Ligament. *J Orthop Res*. 2022 Jan;40(2): 277-284. PMID: [33458865](#); PMCID: [PMC8285460](#).
171. Karamchedu NP, Fleming BC, Proffen BL, Sant NJ, Portilla G, Parola LR, Molino J, Murray MM. Terminal sterilization influences the efficacy of an extracellular matrix-blood composite for treating posttraumatic osteoarthritis in the rat model. *J Orthop Res*. 2022 Feb;40(3): 573-583. PMID: [33913543](#); PMCID: [PMC8553815](#).
172. Karamchedu NP, Fleming BC, Donnenfield JI, Proffen BL, Costa MQ, Molino J, Murray MM. Enrichment of inflammatory mediators in the synovial fluid is associated with slower progression of mild to moderate osteoarthritis in the porcine knee. *Am J Transl Res*. 2021 Jul 15;13(7):7667-7676. PMID: [34377243](#); PMCID: [PMC8340255](#).
173. Costa MQ, Murray MM, Sieker JT, Karamchedu NP, Proffen BL, Fleming BC. Peripheral shift in the viable chondrocyte population of the medial femoral condyle after anterior cruciate ligament injury in the porcine knee. *PLoS One*. 2021 Aug 26;16(8):e0256765. PMID: [34437631](#); PMCID: [PMC8389427](#).
174. Barnett SC, Murray MM, Badger GJ, BEAR Trial Team, Yen Y-M, Kramer DE, Sanborn R, Kiapour AM, Proffen BE, Sant N, Fleming BC, Micheli LJ. Earlier resolution of symptoms and return of function after bridge-enhanced anterior cruciate ligament repair as compared with anterior cruciate ligament reconstruction. *Orthop J Sports Med*. 2021 Nov;9(11):23259671211052530. PMID: [34778483](#), PMCID: [PMC8581796](#).
175. Kiapour AM, Flannery SW, Murray MM, Miller PE, BEAR Trial Team, Fleming BC. Regional differences in anterior cruciate ligament signal intensity after surgical treatment. *Am J Sports Med*. 2021 Dec;49(14):3833-3841. PMID: [34668789](#), PMCID: [PMC8829819](#).
176. Thome, AP, O'Donnell R, DeFroda SF, Cohen BH, Cruz AI, Fleming BC, Owens BD. The effect of skeletal maturity on fixation techniques for tibial eminence fractures. *Orthop J Sports Med*. 2021 Nov;9(11):23259671211049476. PMID: [34796240](#), PMCID: [PMC8593322](#).
177. Barnett SC, Murray MM, Flannery SW, BEAR Trial Team, Menghini D, Fleming BC, Kiapour AM. ACL size but not signal intensity is influenced by sex, body size and knee anatomy. *Orthop J Sports Med*. 2021 Dec;17;9(12):23259671211063836. PMID: [34988237](#), PMCID: [PMC8721387](#).
178. BEAR-MOON Design Group. Design features and rationale of the BEAR-MOON (Bridge-Enhanced ACL Restoration Multicenter Orthopaedic Outcomes Network) randomized clinical trial. *Orthop J Sports Med*. 2022 Jan 25;10(1):23259671211065447. PMID: [35097143](#), PMCID: [PMC8793429](#).

179. Zandiyeh P, Parola LR, Fleming BC, Beveridge JE. Wavelet analysis reveals differential lower limb muscle activity patterns long after anterior cruciate ligament reconstruction. *J Biomech*. 2022 Jan 20;133:110957. PMID: [35114581](#), PMCID: [PMC8893161](#).
180. Sanborn RM, Badger GJ, BEAR Trial Team; Yen YM, Murray MM, Christino MA, Proffen B, Sant N, Barnett S, Fleming BC, Kramer DE, Micheli LJ. Psychological readiness to return to sport at 6 months is higher after Bridge-Enhanced ACL Restoration than autograft ACL reconstruction: Results of a prospective randomized clinical trial. *Orthop J Sports Med*. 2022 Feb 9;10(2):23259671211070542. PMID: [35155707](#), PMCID: [PMC8832603](#).
181. Flannery SW, Walsh EG, Sanborn R, Chrostek C, Costa MQ, Kaushal S, Murray MM, Fleming BC, Kiapour AM. Reproducibility and postacquisition correction methods for quantitative magnetic resonance imaging of the anterior cruciate ligament (ACL). *J Orthop Res*. 2022 Dec;40(12):2908-2913. PMID: [35266588](#), PMCID: [PMC9463398](#).
182. Donnenfield JI, Karamchedu NP, Fleming BC, Molino J, Proffen BL, Murray MM. Articular cartilage and synovium may be important sources of post-surgical synovial fluid inflammatory mediators. *Am J Trans Res*. 2022, 2022;14(3):1640-1651. PMID: [35422952](#), PMCID: [PMC8991160](#).
183. Altahawi FF, Reinke EK, Briskin I, Cantrell WA, Flanagan DC, Fleming BC, Huston LJ, Li X, Oak S, Obuchowski NA, Scaramuzza EA, Winalski CS, Zajichek A, Spindler KP, Jones MH. Meniscal treatment as a predictor of worse articular cartilage damage on MRI at 2 years after ACL reconstruction: The MOON nested cohort. *Am J Sports Med*. 2022 Mar;50(4):951-961. PMID: [35373606](#), PMCID: [PMC9176689](#).
184. Donnenfield JI, Karamchedu NP, Proffen BL, Molino J, Murray MM, Fleming BC. Predicting severity of cartilage damage in a post-traumatic porcine model: Synovial fluid and gait in a Support Vector Machine. *PLoS One*. 2022 Jun 8;17(6):e0268198. PMID: [35675298](#), PMCID: [PMC9176756](#).
185. Pinette MP, Molino J, Proffen BL, Murray MM, Fleming BC. The effects of male and female sex on the development of posttraumatic osteoarthritis in the porcine knee following ACL surgery. *Am J Sports Med*. 2022 Jul;50(9):2417-2423. PMID: [35722806](#), PMCID: [PMC9473678](#).
186. Menghini D, Kaushal SG, Flannery SW, Ecklund K, BEAR Trial Team, Murray MM, Fleming BC, Kiapour AM. Changes in cross-sectional profile of treated anterior cruciate ligament within two years after surgery. *Orthop J Sports Med*. 2022 Oct 14;10(10):23259671221127326. PMID: [36263311](#), PMCID: [PMC9575446](#).
187. Costa MQ, Badger GJ, Chrostek CA, Carvalho OD, Faiola SL, Fadale PD, Hulstyn MJ, Gil HC, Shalvoy RM, Fleming BC. Effects of initial graft tension and patient sex on knee osteoarthritis outcomes after ACL reconstruction: A randomized controlled clinical trial with 10-to-12-year follow-up. *Am J Sports Med*. 2022 Nov;50(13):3510-3521. PMID: [36259724](#), PMCID: [PMC9633422](#).
188. Parola LR, Pinette MP, Fleming BC, Proffen BL, Sant NJ, Karamchedu NP, Costa MQ, Molino J, Murray MM. Hydrogel treatment for idiopathic osteoarthritis in a Dunkin Hartley Guinea pig model. *PLoS One* 2022 Nov 30;17(11):e0278338. PMID: [36449506](#), PMCID: [PMC9710799](#).



189. Sanborn RM, Badger GJ, Fleming BC, Kiapour AM, BEAR Trial Team; Fadale PD, Hulstyn MJ, Owens BD, Proffen B, Sant N, Portilla G, Freiburger C, Henderson R, Barnett S, Costa MQ, Chrostek C, Ecklund K, Micheli LJ, Murray MM, Yen YM, Kramer DE. Preoperative risk factors of subsequent ipsilateral ACL revision surgery following an ACL restoration procedure. *Am J Sports Med.* 2023 Jan;51(1):49-57. PMID: [36412922](#).
190. Sun C, Cao C, Wang S, Guo H, Zhao T, Fleming BC, Owens BD, Beveridge JE, McAllister S, Wei L. A2M inhibits chondrocyte catabolism by blocking IL-1 $\beta$ /NF- $\kappa$ B pathway. *J Orthop Res.* 2023 Jan;41(1):241-248. PMID: [35451533](#), NIHMSID: 2083840.
191. Barnes DA, Badger GJ, Yen YM, Micheli LJ, Kramer DE, Fadale PD, Hulstyn MJ, Owens BD, BEAR Trial Team; Flannery SW, Ecklund K, Sanborn RM, Costa MQ, Chrostek C, Proffen BL, Sant N, Murray MM, Fleming BC, Kiapour AM. Quantitative MRI biomarkers to predict risk of reinjury within 2 years after bridge-enhanced ACL restoration. *Am J Sports Med.* 2023 Feb;51(2):413-421. PMID: [36645042](#), PMCID: [PMC9905304](#).
192. Flannery SW, Beveridge JE, Proffen BL, Walsh EG, BEAR Trial Team, Kramer DE, Murray MM, Kiapour AM, Fleming BC. Predicting anterior cruciate ligament failure load with T<sub>2</sub>\* relaxometry and machine learning as a prospective imaging biomarker for revision surgery. *Sci Rep.* 2023 Mar 2;13(1):3524. PMID: [36864112](#), PMCID: [PMC998160](#).
193. Flannery SW, Barnes DA, Costa MQ, Menghini D, Kiapour AM, Walsh EG, BEAR Trial Team, Kramer DE, Murray MM, Fleming BC. Automated segmentation of the healed anterior cruciate ligament from T<sub>2</sub>\* relaxometry MRI scans. *J Orthop Res.* 2023 Mar;41(3):649-656. PMID: [35634860](#), PMCID: [PMC9708947](#).
194. Menghini D, Kaushal S, Flannery SW, Ecklund K, Murray MM, Fleming BC, Kiapour AM. Three-dimensional magnetic resonance imaging analysis shows sex-specific patterns in changes in anterior cruciate ligament cross-sectional area along its length. *J Orthop Res.* 2023 Apr;41(4):771-778. PMID: [35803594](#), PMCID: [PMC9825677](#).
195. Donnenfield JI, Proffen BL, Fleming BC, Murray MM. Responding to ACL injury and its treatments: Comparative gene expression between articular cartilage and synovium. *Bioengineering.* 2023 Apr 26;10(5):527. PMID: [37237597](#), PMCID: [PMC10215325](#).
196. Flannery SW, Murray MM, Badger GJ, Ecklund K, BEAR Trial Team, Kramer DE, Fleming BC, Kiapour AM. Early MRI-based quantitative outcomes are associated with a positive functional performance trajectory from 6- to 24-months post-ACL surgery. *Knee Surg Sports Traumatol Arthrosc.* 2023 May;31(5):1690-1698. PMID: [35704062](#), PMCID: [PMC9751233](#).
197. Donnenfield JI, Karamchedu NP, Proffen BL, Molino J, Fleming BC, Murray MM. Transcriptomic changes in porcine articular cartilage one year following disruption of the anterior cruciate ligament. *PLoS One.* 2023 May;3;18(5):e0284777. PMID: [37134114](#), PMCID: [PMC10156018](#).
198. Zandiyeh P, Parola LR, Costa MQ, Hague MJ, Molino J, Fleming BC, Beveridge JE. Long-term bilateral neuromuscular function and joint arthrosis after anterior cruciate ligament reconstruction. *Bioengineering.* 2023 Jul 6;10(7):812. PMID: [37508839](#), PMCID: [PMC10376226](#).

199. Sun C, Chang K, Fleming BC, Owens BD, Beveridge JE, Gage A, Talley-Bruns RC, McAllister S, Costa M, Pinette M, Hague M, Molino J, Xiao Y, Lu S, Wei L. A novel large animal model of posttraumatic osteoarthritis induced by inflammation with mechanical stability. *Am J Trans Res.* 2023 Jul 15;15(7):4573-4586. PMID: [37560216](#), PMCID: [PMC10408525](#).
200. Donnenfield JJ, Fleming BC, Proffen BL, Podury A, Murray MM. Microscopic and transcriptomic changes in porcine synovium one year following disruption of the anterior cruciate ligament. *Osteoarthritis Cartilage.* 2023 Dec;31(12):1554-1566. PMID: [37742942](#), PMCID: [PMC10841386](#).
201. Kaushal SG, Kim JY, Singh M, Han M, Flannery SW, Barnes DA, Ecklund K, Murray MM, Badger GJ, Fleming BC, Kiapour AM. Comprehensive evaluation of MRI sequences for signal intensity-based assessment of ACL healing following surgical treatment. *J Orthop Res.* 2024 Jul;42(7):1587-1598. PMID: [38316622](#), PMCID: PMC12121851.
202. Fleming BC, Baranker B, Badger GJ, Kiapour AM, Ecklund K, Micheli LJ, Murray MM. Bridge-enhanced anterior cruciate ligament restoration: Six-year results from the first-in-human cohort study. **Winner of the 2025 William A. Grana Award for Best Original Research of the American Orthopaedic Society for Sports Medicine.** *Orthop J Sports Med.* 2024 Aug 13;12(8):23259671241260632. PMID: [39143986](#), PMCID: [PMC11322937](#).
203. Sun C, Chang K, Fleming BC, Owens BD, Beveridge JE, Zhao Y, Peng G, Wei L. Alpha-2-macroglobulin attenuates posttraumatic osteoarthritis cartilage damage by inhibiting inflammatory pathways in a preclinical Yucatan minipig model. *Am J Sports Med.* 2024 Sep;52(11):2882-2892. PMID: [39214071](#), NIHMS: 2082303.
204. Breker AN, Badger GJ, Kiapour AM, Costa MQ, Fleming EN, Ferrara SL, Chrostek CA, Fadale PD, Hulstyn MJ, Shalvoy RM, Gil HC, Fleming BC. Effect of initial graft tension on knee osteoarthritis outcomes after ACL reconstruction: A randomized controlled clinical trial with 15-year follow-up. *Orthop J Sports Med.* 2025 Mar 4;13(3):23259671251320972. PMID: [40052176](#), PMCID: [PMC11881935](#).
205. Barnes DA, Murray CJ, Molino J, Beveridge JE, Kiapour AM, Murray MM, Fleming BC. Advancement of an automatic segmentation pipeline for metallic artifact removal in post-surgical ACL MRI. *Magn Reson Imaging.* 2025 May 8:110417. doi: 10.1016/j.mri.2025.110417. Online ahead of print. PMID: [40348296](#), NIHMSID: 2081518.
206. Lemme NJ, Badida R, Molino J, Quinn M, Hague M, Fleming BC, Owens B. The effect of posterior tibial slope on anterior cruciate ligament graft forces and knee stability with and without concomitant lateral extraarticular tenodesis. **Winner of the 2024 Cabaud Award of the American Orthopaedic Society for Sports Medicine.** *Am J Sports Med.* 2025 May 21:3635465251338236. doi: 10.1177/03635465251338236. Online ahead of print. PMID: [40396207](#).

#### OTHER PEER-REVIEWED PUBLICATIONS

1. Beynnon BD, Fleming BC. Anterior cruciate ligament strain in-vivo: A review of previous work. *J Biomech.* 1998 Jun;31(6):519-25. PMID: [9755036](#).

2. Fleming BC, Beynnon BD, Renstrom PA, Johnson RJ, Peura GD, Nichols CE. In vivo measurement of ACL strain: Applications to Rehabilitation. **Winner of the GOTS-Beiersdorf Research Award 2000.** Sportorthopädie Sporttraumatologie. 2000 16:133-142.
3. Beynnon BD, Johnson RJ, Fleming BC. The science of anterior cruciate ligament rehabilitation. Clin Orthop Relat Res. 2002 Sep;(402):9-20. PMID: [12218469](#).
4. Fleming BC: Biomechanics of the anterior cruciate ligament. J Orthop Sports Phys Ther. 2003 Aug;33(8):A13-5. PMID: [12968863](#).
5. Fleming BC, Beynnon BD: In vivo measurement of ligament/tendon strains and forces: A review. Ann Biomed Eng. 2004 Mar;32(3):318-28. PMID: [15095807](#).
6. Fleming BC, Oksendahl H, Beynnon BD. Open- or closed-kinetic chain exercises after anterior cruciate ligament reconstruction? Exerc Sport Sci Rev. 2005 Jul;33(3):134-40. PMID: [16006821](#).
7. Fleming BC, Hulstyn MJ, Oksendahl HL, Fadale PD. Ligament injury, reconstruction and osteoarthritis. Curr Opin Orthop. 2005 Oct;16(5):354-362. PMID: [17710194](#); PMCID: [PMC1948850](#).
8. Beynnon BD, Johnson RJ, Abate JA, Fleming BC, Nichols CE. Treatment of anterior cruciate ligament injuries, Part I. Am J Sports Med. 2005 Oct;33(10):1579-602. PMID: [16199611](#).
9. Beynnon BD, Johnson RJ, Abate JA, Fleming BC, Nichols CE. Treatment of anterior cruciate ligament injuries, Part 2. Am J Sports Med. 2005 Nov;33(11):1751-67. PMID: [16230470](#).
10. Wright RW, Preston E, Fleming BC, Amendola A, Andrich JT, Bergfeld JA, Dunn WR, Kaeding C, Kuhn JE, Marx RG, McCarty EC, Spindler KP, Wolcott M, Wolf BR, Williams GN. ACL reconstruction rehabilitation: A systematic review, Part I. J Knee Surg. 2008 Jul;21(3):217-24. PMID: [18686484](#); PMCID: [PMC3692363](#).
11. Wright RW, Preston E, Fleming BC, Amendola A, Andrich JT, Bergfeld JA, Dunn WR, Kaeding C, Kuhn JE, Marx RG, McCarty EC, Spindler KP, Wolcott M, Wolf BR, Williams GN. ACL reconstruction rehabilitation: A systematic review, Part II. J Knee Surg. 2008 Jul;21(3):225-34. PMID: [18686485](#); PMCID: [PMC3692368](#).
12. Butler DL, Lewis JL, Frank CB, Banes AJ, Caplan AI, DeDeyne PG, Dowling M, Fleming BC, Glowacki J, Guldbery RE, Johnstone B, Kaplan DL, Levenston ME, Lotz JC, Lu EY, Lumelsky N, Mao JJ, Mauck RL, McDevitt CA, Mejia LC, Murray MM, Ratcliffe A, Spindler KP, Tashman S, Wagner CT, Weisberg EM, Williams C, Zhang R. Evaluation criteria for musculoskeletal and craniofacial tissue engineering constructs: A conference report. Tissue Eng Part A. 2008 Dec;14(12):2089-104. PMID: [19093294](#); PMCID: [PMC2809981](#).
13. Teeple E, Jay GD, Elsaid GD, Fleming BC. Animal models of osteoarthritis: Challenges of model selection and analysis. AAPS J. 2013 Apr;15(2):438-46. PMID: [23329424](#); PMCID: [PMC3675748](#).
14. Murray MM, Fleming BC: The biology of ACL injury and repair: Kappa Delta Ann Doner Vaughn Award paper. **Winner of the 2013 Kappa Delta Ann Doner Vaughn Award.** J Orthop Res. 2013 Oct;31(10):1501-6. PMID: [23818453](#); PMCID: [PMC3750083](#).



15. Morris RC, Hulstyn MJ, Fleming BC, Owens BD, Fadale PD. Return to play following anterior cruciate ligament reconstruction. Clin Sports Med. 2016 Oct;35(4):655-68. PMID: [27543405](#).
16. Samuelson K, Balk EM, Severson EL, Fleming BC. Limited evidence suggests a protective association between oral contraceptive pill use and anterior cruciate ligament injuries in females: A systematic review. Sports Health. 2017 Nov/Dec;9(6):498-510. PMID: [29016234](#).
17. Perrone GS, Proffen BL, Kiapour AM, Sieker JT, Fleming BC, Murray MM. Bench-to-Bedside: Bridge-Enhanced Anterior Cruciate Ligament Repair. J Orthop Res. 2017 Dec;35(12):2606-2612. PMID: [28608618](#); PMCID: [PMC5729057](#).
18. Getgood A, Brown C, Lording T, Amis A, Claes S, Geeslin A, Musahl V, ALC Consensus Group. The anterolateral complex of the knee: Results from the International ALC Consensus Group Meeting. Knee Surg Sports Traumatol Arthrosc. 2019 Jan;27(1):166-176. PMID: [30046994](#).
19. Fleming BC, Fadale PD, Hulstyn MJ, Shalvoy RM, Tung GA, Badger GJ. Long term outcomes of anterior cruciate ligament reconstruction surgery: 2020 OREF Research Award paper. **Winner of the 2020 OREF Clinical Research Award Paper.** J Orthop Res. 2021 May;39(5):1041-1051. PMID: [32639610](#); PMCID: [PMC7790866](#).
20. DeFroda SF, O'Donnell RM, Fadale PD, Owens BD, Fleming BC. The role of MRI in evaluating post-operative ACL reconstruction healing and graft mechanical properties: A new criterion for return to play? Phys Sportsmed. 2021 May;49(2):123-129. PMID: [32897799](#); PMCID: [PMC8007665](#).
21. Walck CD, Fleming BC, Taylor AE, Mangada PV, Dioguardi AT. A scoping review of current methods and limitations for modeling and evaluating ligamentous structures. World Sci Ann Rev Biomech. 2023 Aug; 1:2330005. DOI: [10.1142/S2810958923300056](#).
22. Beveridge JE, Zandiyeh P, Owens BD, Kiapour AM, Fleming BC. Structure and function are not the same: The case for restoring mechanoreceptor continuity following anterior cruciate ligament injury. RI Med J. 2024 Aug;107(8):12-17. PMID: [39058984](#); PMCID: [PMC11609849](#).

## PREPRINTS

1. Han M, Singh M, Karimi D, Kim JY, Flannery SW; BEAR Trial Team; Ecklund K, Murray MM, Fleming BC, Gholipour A, Kiapour AM. medRxiv. 2023 Jul 27:2023.07.25.23293102. doi: 10.1101/2023.07.25.23293102. PMID: [37546855](#); PMCID: [PMC10402234](#).

## EDITORIALS

1. Fleming BC. Time Zero. Am J Sports Med. 2014 Jul;42(7):1531-3. doi: [10.1177/0363546514539637](#). PMID: [24981339](#).
2. Fleming BC. Conflicted. Am J Sports Med. 2017 Jul;45(8):1727-1729. doi: [10.1177/0363546517716156](#). PMID: [28665714](#).
3. Fleming BC. Am J Sports Med. 2019 Jan;47(1):19-21. doi: [10.1177/0363546518817315](#). PMID: [30781994](#).

4. Fleming BC. Out of Control. Am J Sports Med. 2019 Dec;47(14):3311-3313. doi: [10.1177/0363546519888492](https://doi.org/10.1177/0363546519888492). PMID: [31774714](https://pubmed.ncbi.nlm.nih.gov/31774714/).
5. Fleming BC. The Other Side of COVID-19. Am J Sports Med. 2020 Dec;48(14):3415-3416. doi: [10.1177/0363546520973604](https://doi.org/10.1177/0363546520973604). PMID: [33252259](https://pubmed.ncbi.nlm.nih.gov/33252259/).
6. Fleming BC. Valley of Death. Am J Sports Med. 2021 Nov;49(13):3476-3478. doi: [10.1177/03635465211053258](https://doi.org/10.1177/03635465211053258). PMID: [34730429](https://pubmed.ncbi.nlm.nih.gov/34730429/).
7. Fleming BC. Fifty Years of ACL Biomechanics: What's Next? Am J Sports Med. 2022 Dec;50(14):3745-3748. doi: [10.1177/03635465221136834](https://doi.org/10.1177/03635465221136834). PMID: [36472484](https://pubmed.ncbi.nlm.nih.gov/36472484/).
8. Fleming BC. Reviewer Fatigue. Am J Sports Med. 2023 Dec;51(14):3632-3633. doi: [10.1177/03635465231210848](https://doi.org/10.1177/03635465231210848). PMID: [38031750](https://pubmed.ncbi.nlm.nih.gov/38031750/).
9. Fleming BC. The Sensational ACL. Am J Sports Med. 2024 Sep;52(11):2699-2701. doi: [10.1177/03635465241280561](https://doi.org/10.1177/03635465241280561). PMID: [39276121](https://pubmed.ncbi.nlm.nih.gov/39276121/).

## BOOKS

1. The ACL Handbook: Knee Biology, Mechanics, and Treatment, (Eds.) Murray MM, Vavken P, Fleming BC, Springer, New York, 2013. doi: [10.1007/978-1-4614-0760-7](https://doi.org/10.1007/978-1-4614-0760-7).

## BOOK CHAPTERS

1. Pope MH, Fleming BC. "Knee biomechanics and materials". In: Total Knee Replacement. (ed.) Laskin R, Springer-Verlag, London, 1991, pp. 25-38.
2. Fleming BC. Knee joint kinematics in the mid-sagittal plane: clinical evaluation and surgical replacement of the anterior cruciate ligament. Masters Thesis, University of Vermont, January 1991.
3. Fleming BC, Beynnon BD, Johnson, R. "The use of knee laxity testers for determination of anterior-posterior stability of the knee: Their pitfalls in practice". In: The Anterior Cruciate Ligament: Current and Future Concepts, (Eds.) Arnoczky S, Woo S, Frank C, Jackson D, Raven Press, New York, 1993, pp. 239-250.
4. Beynnon BD, Johnson RJ, Fleming BC. "Mechanics of ACL reconstruction. In: The Anterior Cruciate Ligament: Current and Future Concepts, (Eds.) Arnoczky S, Woo S, Frank C, Jackson D, Raven Press, New York, 1993, pp. 259-272.
5. Beynnon BD, Pope MH, Fleming BC. "The measurement of anterior cruciate ligament biomechanics". In: The Anterior Cruciate Ligament: Current and Future Concepts, (Eds.) Arnoczky S, Woo S, Frank C, Jackson D, Raven Press, New York, 1993, pp. 101-111.
6. Beynnon BD, Pope MH, Johnson RJ, Howe JG, Fleming BC. "The measurement of anterior cruciate ligament strain in vivo. In: Synovial Joint Function and Response of the Knee Tissue to Mechanical Injuries. American Academy of Orthopaedic Surgeons, Rosemont, 1993, pp. 363-391.
7. Fleming BC. The in vivo strain behavior of the anterior cruciate ligament during stationary bicycling: An experimental and analytical investigation. Doctoral Dissertation, University of Vermont, July 1996.
8. Fleming BC, Beynnon BD, Renstrom PA, Johnson RJ. "In-vivo measurement of ACL and ACL graft strain". In: Knee Ligaments: Structure, Function, Injury, and

- Repair, (Eds.) Akeson W, O'Connor J, Pedowitz R, Lippincott-Raven Publishers, Philadelphia, 2003, pp. 295-308. ISBN: [9780781718172](#).
9. Trihn NH, Lester J, Fleming BC, Tung G, Kimia BB. Accurate Measurement of Cartilage Morphology using a 3D Laser Scanner. In: Computer Vision Approaches to Medical Image Analysis: Lecture Notes in Computer Science, (Eds.) Beichel RR, Sonka M, Vol 4241, Springer, Berlin, 2006, pp. 37-48. doi: [10.1007/11889762\\_4](#)
  10. Proffen B, Vavken P, Palmer R, Fleming BC, Murray MM. "The mature sheep as an animal model for bio-enhanced anterior cruciate ligament repair and reconstruction. In: The knee: Current Concepts in Kinematics, Injury Types, and Treatment Options, Nova Science Publishers, New York, 2011, pp. 117-129. ISBN: [978-1-61942-268-1](#).
  11. Murray MM, Fleming BC. The biology of the normal ACL. In: The ACL Handbook: Knee Biology, Mechanics, and Treatment, (Eds.) Murray MM, Vavken P, Fleming BC, Springer, New York, 2013, pp. 63-72. ISBN: 978-1-4614-0759-1; doi: [10.1007/978-1-4614-0760-7\\_5](#).
  12. Vavken P, Fleming BC. In vitro models of ACL injury. In: The ACL Handbook: Knee Biology, Mechanics, and Treatment, (Eds.) Murray MM, Vavken P, Fleming BC, Springer, New York, 2013, pp. 123-137. ISBN: 978-1-4614-0759-1; doi: [10.1007/978-1-4614-0760-7\\_10](#).
  13. Vavken P, Murray MM, Fleming BC. Outcome assessment for ACL tissue Engineering. In: The ACL Handbook: Knee Biology, Mechanics, and Treatment, (Eds.) Murray MM, Vavken P, Fleming BC, Springer, New York, 2013, pp. 179-200. ISBN: 978-1-4614-0759-1; doi: [10.1007/978-1-4614-0760-7\\_13](#).
  14. Fleming BC. Bio-enhancement of ACL graft healing. In: The ACL Handbook: Knee Biology, Mechanics, and Treatment, (Eds.) Murray MM, Vavken P, Fleming BC, Springer, New York, 2013, pp. 285-299. ISBN: 978-1-4614-0759-1; doi: [10.1007/978-1-4614-0760-7\\_21](#).
  15. Fleming BC, Biercevicz A, Murray MM, Li W, Wang V. Emerging Techniques for Imaging Tendons and Ligaments. In: Magnetic Resonance in Tissue Engineering and Regenerative Medicine, (Eds.) Kotecha M, Magin R, Mao J, John Wiley & Sons, Hoboken, 2017, pp. 209-236, ISBN 978-1-119-19335-7; doi: [10.1002/9781119193272.ch10](#).
  16. Mae T, Fleming BC. ACL Graft Tensioning. In: Controversies in the Technical Aspects of ACL Reconstruction: An Evidence Based Medicine Approach, (Eds.) Nakamura N, Zaffagnini S, Marx RG, Musahl V, Springer-Verlag, Berlin, 2017, pp. 289-299, ISBN 978-3-662-52740-5; doi: [10.1007/978-3-662-52742-9\\_27](#)

## MULTIMEDIA

1. American Journal of Sports Medicine Podcast: Effects of Initial Graft Tension After Anterior Cruciate Ligament Reconstruction. AJSM 41.1 January 2013. [http://ajs.sagepub.com/content/suppl/2012/12/05/0363546512464200.DC2/AJSM\\_January\\_2013.mp3](http://ajs.sagepub.com/content/suppl/2012/12/05/0363546512464200.DC2/AJSM_January_2013.mp3)
2. Stephen Hawking's Science of the Future, Designer Humans – Episode 5 of 6, National Geographic Channel, June 15, 2014. <http://youtube/D6CAgYsHAKU>

3. ORS Basic Science Tip, Patient Sex Affects Knee Osteoarthritis Outcomes after ACL Reconstruction. ORS Connect. The Online Newsletter for ORS Members. 23 Dec 2022, [ORS Connect](#).

#### OTHER NON-PEER REVIEWED PUBLICATIONS

1. Jarvinen M, Howe JG, Kaplan M, Fleming BC, Johnson RJ. Polven eturistisiteen rekonstruktio patellajannetta kayttaen-pitkaaikaishoitotulokset. *Finnish Journal of Orthopaedics and Traumatology* 10: 167-169, 1987.
2. Pope MH, Fleming BC. The biomechanics of low back pain. *Surgical Rounds for Orthopaedics* 4: 35-42, 1989.
3. Fleming BC, Beynnon BD, Pope MH. Functional anatomy and biomechanics of the anterior cruciate ligament. *Operative Techniques in Sports Medicine* 1: 1-9, 1993.
4. Fleming BC, Beynnon BD, Nichols CE, et al. An in vivo comparison between intra-operative isometric measurement and local elongation of the graft after reconstruction of the anterior cruciate ligament. *Orthopaedics and Rheumatology Digest* 2: 29-31, 1995.

#### PATENTS (Issued)

1. Martha MM, Fleming BC. Biomaterial for Articular Cartilage Maintenance and Treatment of Arthritis. AU Patent No. 2019222977, 23 December 2021; European Patent No. EP2809340, 24 November 2021; US Patent No. 11,484,578, 1 November 2022.
2. Fleming BC, Murray MM. Non-Invasive Measurement to Predict Post-Surgery Anterior Cruciate Ligament Success. U.S. Patent No. 11,234,657, 1 February 2022.

#### ABSTRACTS

1. Kristiansen T, Fleming BC, Neale G, Reinecke S, Pope MH: A comparative study of fracture gap motion in external fixation. 11th International Conference on Hoffmann External Fixation, Toronto, 18-20 September 1985.
2. Fleming BC, Kristiansen T, Reinecke S, Neale G, Pope MH: Fracture gap motion in external fixation. North American Congress on Biomechanics, Montreal, 25-27 August 1986.
3. Paley D, Fleming BC, Pope MH, Kristiansen T: A comparative study of fracture gap motion and shear in external fixation. Recent Advances in External Fixation, Riva del Garda, Italy, 1986.
4. Kristiansen T, Paley D, Fleming BC, Pope MH: Mechanical characterization of the Ilizarov external fixator. 12th International Conference on Hoffmann External Fixation, Garmisch-Partenkirchen, 9-11 October 1986.
5. Pope MH, Fleming BC, Kristiansen T: Complex motions of the fracture gap in external fixation systems. 12th International Conference on Hoffmann External Fixation, Garmisch-Partenkirchen, 9-11 October 1986.
6. Kristiansen T, Fleming BC, Pope MH: Complex motions of the fracture gap in loaded external fixateurs. Orthopaedic Research Society, San Francisco, 19-22 January 1987.

7. Stein A, Fleming BC, Howe JG, Pope MH: An in vivo evaluation of four types of total knee arthroplasties. Rehabilitation Engineering Society of North America, San Jose, 19-23 June 1987.
8. Fleming BC, Stein A, Howe JG, Pope MH: An in vitro comparative study of total knee arthroplasties. Rehabilitation Engineering Society of North America, San Jose, 19-23 June 1987.
9. Howe JG, Kaplan M, Fleming BC, Jarvinen M, Johnson RJ: Long term follow up of anterior cruciate reconstruction using quadriceps patellar tendon graft. American Academy of Orthopaedic Surgeons, 55th Annual Meeting, Atlanta, 4-9 February 1988.
10. Erickson A, Beynnon BD, Wertheimer C, Fleming BC, Pope MH, Johnson RJ, Howe JG, Nichols CE: An in vivo study of ACL strain in the normal knee during Lachman and drawer tests. 14th Northeast Bioengineering Conference, Durham, 12 March 1988.
11. Howe JG, Johnson RJ, Wertheimer C, Nichols CE, Fleming BC, Erickson A, Beynnon BD, Pope MH: Characterization of the ACL strain pattern in vivo. ACL Study Group, Aspen, 19-26 March 1988.
12. Fleming BC, Beynnon BD, Shapiro E, Johnson RJ, Howe JG, Pope MH: A comparison of knee laxity instrumentation systems. American Orthopaedic Society for Sports Medicine, Palm Desert, 13-16 June 1988.
13. Beynnon BD, Fleming BC, Erickson A, Wertheimer C, Pope MH, Howe JG, Johnson RJ, Nichols CE: Characterization of the anterior cruciate ligament strain pattern in vivo. American Society of Biomechanics, 18-20 September 1988.
14. Beynnon BD, Pope MH, Fleming BC, Howe JG, Johnson RJ, Erickson A, Wertheimer C, Nichols CE: An in vivo study of the ACL strain biomechanics in the normal knee. Orthopaedic Research Society, Las Vegas, 6-9 February 1989.
15. Fleming BC, Beynnon BD, Erickson A, Wertheimer C, Pope MH, Nichols CE, Johnson RJ, Howe JG: An in vivo comparison of anterior joint laxity and strain in the anteromedial band of the ACL. Orthopaedic Research Society, Las Vegas, 6-9 February 1989.
16. Paley D, Fleming BC, Kristiansen T, Pope MH: The biomechanics of the Ilizarov external fixator under conditions of fracture fixation and limb lengthening. 13th International Conference on Hoffmann External Fixation, Rochester, 25-27 May 1989.
17. Kristiansen T, Fleming BC, Halsey D, Pope MH: Mechanical performance of the Hoffmann and Ultra-X external fixation systems. 13th International Conference on Hoffmann External Fixation, Rochester, 25-27 May 1989.
18. Halsey D, Fleming BC, Kristiansen T, Krag MH, Pope MH: External fixator pin design for cancellous bone. 13th International Conference on Hoffmann External Fixation, Rochester, 25-27 May 1989.
19. Beynnon BD, Wertheimer C, Fleming BC, Erickson A, Pope MH, Howe JG, Johnson RJ, Nichols CE: In vivo measurement of the anterior cruciate ligament during functional knee bracing. American Society of Biomechanics, Burlington, 23-25 August 1989.
20. Beynnon BD, Fleming BC, Erickson A, Johnson RJ, Nichols CE, Pope MH: In vivo displacement measurements in the reconstructed anterior cruciate ligament. American Society of Biomechanics, Burlington, 23-25 August 1989.

21. Fleming BC, Beynnon BD, McLeod W, Pope MH, Johnson RJ, Howe JG: Comparison of a tensiometer and isometer for implantation of a prosthetic anterior cruciate ligament. American Society of Biomechanics, Burlington, 23-25 August 1989.
22. Kaplan M, Howe JG, Fleming BC, Johnson RJ, Jarvinen M: Functional analysis of anterior cruciate ligament reconstruction using patellar tendon graft: A specific sports review. International Olympic Committee World Congress on Sports Sciences, Colorado Springs, 28-3 October 1989.
23. Beynnon BD, Wertheimer C, Fleming BC, Erickson A, Pope MH, Howe JG, Johnson RJ, Nichols CE: An in vivo study of the anterior cruciate ligament strain biomechanics during functional knee bracing. Orthopaedic Research Society, New Orleans, 5-8 February 1990.
24. Fleming BC, Beynnon BD, Erickson A, Pope MH, Johnson RJ, Nichols CE, Howe JG: An in vivo study of the reconstructed anterior cruciate ligament at time of implantation. Orthopaedic Research Society, New Orleans, 5-8 February 1990.
25. Kaigle A, Pope MH, Fleming BC, Hansson T: A method for the intravital measurement of interspinous kinematics. International Society for the Study of the Lumbar Spine, Boston, June 1990.
26. Kaigle A, Pope MH, Fleming BC, Hansson T: A method for the intravital measurement of interspinous kinematics. American Society of Biomechanics, Miami, November 1990.
27. Fleming BC, Beynnon BD, McLeod W, Howe JG, Pope MH: The effect of tension and placement of a prosthetic anterior cruciate ligament on the anteroposterior laxity of the knee. Orthopaedic Research Society, Anaheim, 4-7 March 1991.
28. Stankewich C, Beynnon BD, Fleming BC, Pope MH, Johnson RJ: The development and initial testing of a new sensor to simultaneously measure strain and pressure in tendons and ligaments. 17th Northeast Bioengineering Conference, Hartford, 4-6 April 1991.
29. Beynnon BD, Stankewich CJ, Fleming BC, Pope MH, Johnson RJ: The development and initial testing of a new sensor to simultaneously measure strain and pressure in tendons and ligaments. Combined Meeting of the Orthopaedic Research Societies of USA, Japan and Canada, Alberta, 21-23 October 1991.
30. Beynnon B, Huston D, Pope M, Fleming B, Johnson R, Nichols C, Renstrom P: The effect of ACL reconstruction tension on the knee and cruciate ligaments. Orthopaedic Research Society, Washington, 17-20 February 1992.
31. Fleming B, Beynnon B, Nichols C, Renstrom P, Erickson A, Johnson R, Pope M: In vivo comparison between predictive isometry measurement and elongation in the reconstructed ACL. Orthopaedic Research Society, Washington, 17-20 February 1992.
32. Fleming B, Beynnon B, Stankewich C, Pope M, Nichols C, Renstrom P, Johnson R: The effect of quadriceps and hamstring activity on strain in the anterior cruciate ligament. American Society of Biomechanics, Chicago, 24-28 August 1992. The 1992 ASB Pre-doctoral Young Scientist Award Paper.
33. Beynnon BD, Fleming BC, Pope MH, Stankewich C, Nichols CE, Renstrom P, Johnson RJ: The measurement of anterior cruciate ligament strain during rehabilitation activities in vivo. Orthopaedic Research Society, San Francisco, 15-18 February 1993.

34. Fleming BC, Beynnon BD, Tohyama H, Johnson RJ, Monterose L, Nichols CE, Renstrom P: The determination of a zero strain reference for the anteromedial band of the anterior cruciate ligament. Orthopaedic Research Society, San Francisco, 15-18 February 1993.
35. Beynnon BD, Fleming BC, Johnson RJ, Nichols CE, Renstrom P, Pope MH: Anterior cruciate ligament strain behavior during rehabilitation exercises in vivo. The Albert Trillat Young Investigator Award Paper. International Knee Society, Copenhagen, 26 June 1993.
36. Tohyama H, Beynnon BD, Fleming BC, Peura G, Pope MH: Theoretical study of an Arthroscopic Force Probe for in vivo measurement of tendon load - Effects of tissue material properties on transducer output. Winter Annual Meeting of the American Society of Mechanical Engineers, New Orleans, 29-3 November-December, 1993.
37. Tohyama H, Beynnon BD, Fleming BC, Peura GD, Johnson RJ, Pope MH: Evaluation of the arthroscopic force probe; a study of the factors that effect the measurement of tendon and ligament force in vivo. Orthopaedic Research Society, New Orleans, 21-24 February 1994.
38. Beynnon BD, Gottlieb D, Elmqvist L-G, Fleming BC, Renstrom PA, Johnson RJ, Pope MH: The latency of reflex muscle contraction in normal and anterior cruciate ligament deficient subjects. Orthopaedic Research Society, New Orleans, 21-24 February 1994.
39. Tohyama H, Beynnon BD, Fleming BC, Johnson RJ, Pope MH: Ultimate failure strength is not the only criterion for evaluation of tendon graft fixation. Orthopaedic Research Society, New Orleans, 21-24 February 1994.
40. Beynnon BD, Fleming BC, Johnson RJ, Nichols CE, Renstrom PA, Pope MH: Anterior cruciate ligament graft elongation at the time of implantation and one year post-operatively. Orthopaedic Research Society, New Orleans, 21-24 February 1994.
41. Fleming BC, Stankewich CJ, Beynnon BD, Nichols CE, Renstrom P, Johnson RJ, Pope MH: Anterior cruciate ligament strain, in vivo, and application of a mathematical model to predict anterior shear forces during squatting. Orthopaedic Research Society, New Orleans, 21-24 February 1994.
42. Johnson RJ, Beynnon BD, Fleming BC, Nichols CE, Renstrom PA, Pope MH, Howe JG: The biomechanics of the anterior cruciate ligament and bone-patellar tendon-bone graft in vivo. Elizabeth Lanier Kappa Delta Award. American Academy of Orthopaedic Surgeons, New Orleans, 24-28 February 1994.
43. Ekeland A, Beynnon BD, Fleming BC, Johnson RJ, Peura G, Risberg MA, Tjomsland O: Evaluation of knee joint laxity and the structural properties for ACL graft in the human; A case report. ACL Study Group, Austria, 13-20 March 1994.
44. Beynnon BD, Yu J, Huston DR, Fleming BC, Johnson RJ, Haugh L, Pope MH: A sagittal plane model of the knee and cruciate ligaments with application of a sensitivity analysis. 2nd World Congress on Biomechanics, Amsterdam, 10-15 July 1994.
45. Beynnon BD, Pope MH, Fleming BC, Johnson RJ, Nichols CE, Renstrom PA: Anterior cruciate ligament strain behavior during rehabilitation exercises in vivo. 2nd World Congress on Biomechanics, Amsterdam, 10-15 July 1994.

46. Beynnon BD, Fleming BC, Johnson RJ, Renstrom PA: ACL graft elongation at the time of implantation and one year post-operatively. 45th FIMS World Congress of Sports medicine, Athens, 10-16 September 1994.
47. Meriam C, Beynnon BD, Fleming BC, Nichols CE, Johnson RJ, Renstrom PA: The effect of screw insertion torque on tendons fixed with spiked washers. Orthopaedic Research Society, Orlando, 13-16 February 1995.
48. Beynnon BD, Fleming BC, Peura GD, Johnson RJ, Renstrom PA, Nichols CE, Pope MH: An in vivo investigation of anterior cruciate ligament strain: The effect of functional knee bracing and the attachment strap tension. Orthopaedic Research Society, Orlando, 13-16 February 1995.
49. Fleming BC, Beynnon BD, Peura GD, Nichols CE, Renstrom PA, Johnson RJ: Strain behavior in the anterior cruciate ligament due to variations in the initial strain conditions of a prosthetic stint. Orthopaedic Research Society, Orlando 13-16 February 1995.
50. Fleming BC, Beynnon BD, Peura GD, Nichols CE, Johnson RJ, Renstrom PA, Pope MH: Anterior cruciate ligament strain during an open and closed kinetic chain activity; an in vivo study. Orthopaedic Research Society, Orlando, 13-16 February 1995.
51. Peura GD, Fleming BC, Beynnon BD: Measurement of load in soft tissue with the Arthroscopically Implantable Force Probe. 2nd Combined Meeting of the Orthopaedic Research Societies, San Diego, 6-8 November 1995.
52. Fleming BC, Beynnon BD, Renstrom P, Peura GD, Nichols CE, Hull ML, Pope MH, Johnson RJ: The strain behavior of the anterior cruciate ligament (ACL) during bicycling: An in vivo study. Orthopaedic Research Society, Atlanta 18-22 February 1996.
53. Fleming BC, Good L, Peura GD, Beynnon BD: Measurement of anterior cruciate ligament (ACL) loads using an arthroscopically implantable force probe. Orthopaedic Research Society, Atlanta 18-22 February 1996.
54. Fleming BC, Beynnon BD, Renstrom PA, Peura GD, Nichols CE, Johnson RJ: The strain behavior of the anterior cruciate ligament during bicycling: An in vivo study. American Society of Sports Medicine, Orlando, 16-20 June 1996.
55. Beynnon BD, Johnson RJ, Fleming BC, Stankewich CJ, Renstrom PA, Nichols CE: The strain behavior of the anterior cruciate ligament during squatting and active extension: A comparison of open and closed kinetic chain exercise. The AOSSM O'Donoghue Sports Injury Research Award Paper. American Society of Sports Medicine, Orlando, 16-20 June 1996.
56. Fleming BC, Beynnon BD, Peura GD, Uh BS, Renstrom P, Nichols CE, Johnson RJ: The strain behavior of the Anterior Cruciate Ligament (ACL) during stair climbing. Orthopaedic Research Society, San Francisco, 9-13 February 1997.
57. Fleming BC, Beynnon BD, Renstrom PA, Peura GD, Nichols CE, Johnson RJ: The strain behavior of the anterior cruciate ligament during bicycling: An in vivo study. The Albert Trillat Young Investigator Award. International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine, Buenos Aires, 11-16 May 1997.
58. Huston DR, Fleming BC, Krag MK, Sugihara S: Cranial pin force measurement in a halo-vest orthosis. Rehabilitation Engineering Society of North America, 20-24 June 1997.



59. Fleming BC, Huston DR, Krag MH, Sugihara S: In vivo measurement of cranial pin forces in a halo-vest orthosis. Cervical Spine Research Society, Palm Desert, 4-6 December 1997.
60. Uh B, Beynnon BD, Johnson RJ, Fleming BC, Renstrom P, Nichols CE: The elongation behavior of anterior cruciate ligament grafts in vivo: A long term follow-up study. American Society of Sports Medicine, 22 March 1997.
61. Uh BS, Beynnon BD, Johnson RJ, Fleming BC, Renström PA, Nichols CE: The elongation behavior of the anterior cruciate ligament graft in vivo: A long term follow up study. Orthopedic Research Society, New Orleans, 16-19 March 1998.
62. Krag MH, Fleming BC, Huston DR, Sugihara S: Characterization of cranial pin forces in a halo-vest orthosis, in vivo. American Academy of Orthopaedic Surgeons, New Orleans, 19-24 March 1998.
63. Beynnon BD, Johnson RJ, Uh BS, Fleming BC, Peura GD, Nichols CE, Renström PA: A Prospective, Randomized, Double-Blinded Investigation of Rehabilitation Following Anterior Cruciate Ligament Reconstruction. ACL Study Group, March 28-April 3, 1998.
64. Reed B, Ashikaga T, Fleming B, Zimny N: The effects of ultrasound and strength on knee ligament extensibility. American Physical Therapy, 4 May 1998.
65. Fleming BC, Beynnon BD, Churchill DL, Webster JD, Renström PA: The effect of weight bearing and bracing in the anterior cruciate ligament (ACL) deficient knee. Orthopaedic Research Society, Anaheim, 1-4 February 1999.
66. Churchill DL, Uh BS, Risberg MA, Fleming BC, Bartlett J, Beynnon BD: Repeatability and reliability of the Vermont knee laxity device. Orthopaedic Research Society, Anaheim, 1-4 February 1999.
67. Fleming BC, Beynnon BD, Churchill D, Webster J, Renström P: The effect of weight bearing and bracing in the anterior cruciate ligament deficient knee. EFORT, Brussels, 3-8 June 1999.
68. Beynnon BD, Fleming BC, Renström PA, Engstrom B, Peura G: Measurement of Anterior cruciate ligament strain during non-weight and weight bearing Conditions. International Society of Biomechanics, 8-13 August 1999.
69. Beynnon BD, Brown D, Labovitch R, Fleming BC, Churchill DL: The biomechanics of functional knee braces on the anterior cruciate ligament Deficient Knee. International Society of Biomechanics, 8-13 August 1999.
70. Fleming BC, Krag MH, Kawai D, Huston D: Measurement of cranial pin forces in a halo vest orthosis. North American Spine Society, 20-23 October 1999.
71. Fleming BC, Beynnon BD, Renstrom, PA, Engstrom B, Peura GD: The effect of weight bearing on anterior cruciate ligament (ACL) strain. American Society of Biomechanics, Pittsburgh, 21-23 October 1999. The 1999 ASB Post-Doctoral Young Scientist Award Paper.
72. Fleming BC, Renstrom P, Beynnon BD, Engstrom B, Peura GD: Functional knee bracing reduces the strains on the ACL during weight bearing and non-weight bearing conditions. Orthopaedic Research Society, Orlando, 12-15 March 2000.
73. Fleming BC, Abate JA, Peura GD, Beynnon BD: The relationship between initial graft tension and the anteroposterior laxity in the anterior cruciate ligament reconstructed goat knee. Orthopaedic Research Society, Orlando, 12-15 March 2000.
74. Fleming BC, Parsons BO, Churchill DL, Labovich R, Brown D, Beynnon BD: The effects of weight bearing on knee kinematics in the anterior cruciate

- ligament-deficient patient. Orthopaedic Research Society, Orlando, 12-15 March 2000.
75. Fleming BC, Renstrom PA, Ohlen G, Saartok T, Beynnon BD, Peura GD, Johnson RJ: The gastrocnemius is an antagonist of the anterior cruciate ligament. International Symposium of Ligaments and Tendons, Orlando, 11 March 2000.
  76. Beynnon BD, Johnson RJ, Fleming BC, Haugh L, Scott Z, Webster, J, Macy J: A Prospective Study of Knee Injury Risk Factors. International Symposium on Ligaments and Tendons, Orlando, 11 March 2000.
  77. Renstrom P, Fleming BC, Beynnon BD, Engstrom B, Peura GD: Functional knee bracing reduces the strains on the ACL during weight bearing and non-weight bearing and non-weight bearing conditions. ACL Study Group, Rhodes Greece, 20-26 May 2000.
  78. Johnson RJ, Beynnon BD, Uh BS, Fleming BC, Peura GD, Nichols CE, Renstrom PA: A prospective, randomized, double blinded investigation of rehabilitation following ACL reconstruction. Presented at the annual meeting of the ACL Study Group, Rhodes, Greece, 20-26 May 2000.
  79. Fleming BC, Beynnon BD, Renstrom PA, Johnson RJ, Peura GD, Nichols CE: In vivo measurement of Anterior Cruciate Ligament Strain: Application to rehabilitation. GOTS-Beiersdorf Research Award. Gesellschaft fur Orthopadisch-Traumatologische Sportmedizin (GOTS), Munich Germany, June 30 to July 2 2000.
  80. Fleming BC, Renstrom PA, Beynnon BD, Ohlen, G, Peura GD, Saartok T, Johnson RJ: Contraction of the Gastrocnemius Muscle Produces Strains on the ACL. Orthopaedic Research Society, San Francisco, 25-28 February 2001.
  81. Fleming BC, Renstrom PA, Peura GD, Abate JA, Ohlen G, Beynnon BD, Johnson RJ: Strain Response of the ACL during the leg press exercise. Orthopaedic Research Society, San Francisco, 25-28 February 2001.
  82. Brattbakk B, Fleming BC, Peura GD, Beynnon BD: Measurements of anterior-posterior knee laxity: A comparison of three techniques. Orthopaedic Research Society, San Francisco, 25-28 February 2001.
  83. Fleming BC, Renstrom PA, Ohlen G, Saartok T, Beynnon BD, Peura GD: The gastrocnemius is an antagonist of the anterior cruciate ligament. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Montreux, 14-18 May 2001.
  84. Fleming BC, Brattbakk B, Peura GD, Beynnon BD: Measurement of anterior-posterior knee laxity: A comparison of three techniques. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Montreux, 14-18 May 2001.
  85. Renstrom PA, Fleming BC, Ohlen G, Saartok T, Peura GD, Beynnon BD: The ACL strain response during the leg-press exercise.. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Montreux, 14-18 May 2001.
  86. Fleming BC, Ohlen G, Abate J, Renstrom PA, Peura GD, Beynnon BD: The effects of compressive load and muscle function on anterior cruciate ligament strain during rehabilitation exercises. Orthopaedic Research Society, Dallas, 10-13 February 2002.

87. Fleming BC, Cresswell A, Nordlund M, Peura GD, Saartok T, Thorstensson A, Renstrom PA: Strain in the Achilles tendon during isometric contractions of the human triceps surae. Orthopaedic Research Society, Dallas, 10-13 February 2002.
88. Fleming BC, Renstrom PA, Ohlen G, Peura GD, Beynnon BD: The effects of external compressive load and muscle function on peak ACL strain values during knee extensor & flexor exercises. American Orthopaedic Society of Sports Medicine, Orlando, 30–3 June 2002.
89. Beynnon BD, Uh B, Fleming BC, Poole AR, Johnson RJ: Rehabilitation following ACL reconstruction. American Orthopaedic Society of Sports Medicine, Orlando, 30–3 June 2002.
90. Fleming BC, Abate JA, Peura GD, Beynnon BD: Osteoarthritis (OA) following anterior cruciate ligament (ACL) reconstruction. Orthopaedic Research Society, New Orleans, 2-5 February 2003.
91. Walsh EF, DaSilva M, Fleming BC, Uber BE, Ramos P, Akelman EA, Crisco JJ, Spenciner DB, Paiva JA: Thumb carpometacarpal arthroscopy: A topographical, arthroscopic, anatomic study of a new thenar portal. American Society of the Hand. Chicago, 17 September 2003.
92. Fleming BC, Beynnon BD, Johnson RJ, Renstrom PA, Uh B: The effects of initial graft tension on anterior cruciate ligament reconstruction. Orthopaedic Research Society, San Francisco, 7-11 March 2004.
93. Coughlin KM, Peura GD, Fleming BC, Hallock S, Beynnon BD: In vivo load in the medial compartment of the rabbit knee. Orthopaedic Research Society, San Francisco, 7-11 March 2004.
94. Roemhildt ML, Fleming BC, Peura GD, Coughlin KM, Beynnon BD: Properties of articular cartilage in the rabbit tibial plateau. Orthopaedic Research Society, San Francisco, 7-11 March 2004.
95. Fleming BC, Beynnon BD, Renstrom PA, Uh BS, Johnson RJ: Initial ACL graft tension and changes in knee laxity during healing. American Orthopaedic Society for Sports Medicine, Quebec City, 24-27 June 2004.
96. Brattbakk B, Fleming BC, Peura GD, 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). American Orthopaedic Society for Sports Medicine, Quebec City, 24-27 June 2004.
97. Roemhildt ML, Coughlin KM, Peura GD, Fleming BC, Beynnon BD: The relationship between altered load about the tibiofemoral joint and articular cartilage properties. Orthopaedic Research Society, Washington, 20-23 February 2005.
98. Beynnon BD, Johnson RJ, Brattbakk B, Abate JA, Fleming BC, 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 treatment programs administered over two different time periods. AOSSM O'Donoghue Sports Injury Research Award. American Orthopaedic Society for Sports Medicine, Keystone, 14-17 July 2005.
99. Langer P, Nickisch F, Spenciner D, Fleming BC, DiGiovanni C: In vitro evaluation of lateral process talus excision on ankle and subtalar joint stability. International Federation of Foot & Ankle Societies, Naples, 15-18 September, 2005.

100. Brady MF, Fleming BC, Bradley MP, Banerjee R, Fadale P, Hulstyn MJ: The Effect of Initial Graft Tension on the Tibiofemoral Compressive Forces in the Human Knee. American Academy of Orthopaedic Surgeons, Chicago, 22-26 March 2006.
101. Fleming BC, Blanpied P, Ritter M, Oksendahl HL, Hulstyn MJ, Fadale PD, Badger GJ: The effects of intra-articular anesthesia on muscle reactions during perturbation testing. American Physical Therapy Association, San Diego, 1-5 February 2006.
102. Fleming BC, Tung GA, Trafton TG, Fadale PD, Hulstyn MJ: Magnetic susceptibility artifact from ACL interference screws does not affect articular cartilage volume measurements. VI International Symposium of Ligament & Tendon, Chicago, 17 March 2006.
103. Fleming BC, Blanpied PR, Ritter M, Oksendahl H, Hulstyn M, Fadale P: The effect of intra-articular anesthesia on leg muscle reaction during perturbation testing. Orthopaedic Research Society, Chicago, 19-22 March 2006.
104. Brady MF, Fleming BC, Bradley MP, Banerjee R, Fadale P, Hulstyn MJ: Effects of initial graft tension on the tibiofemoral compressive forces following ACL reconstruction. Orthopaedic Research Society, Chicago, 19-22 March 2006.
105. Oksendahl HO, Gomez N, Badger GJ, Thomas CS, Hulstyn MJ, Fadale PD, Fleming BC: Reliability of digital radiographic assessment of joint space width in the knee. Orthopaedic Research Society, Chicago, 19-22 March 2006.
106. Tashjian RZ, Coburn J, Spenciner D, Fleming BC: Anatomic direction of pull of the rotator cuff tendons dependent on humeroscapular position. Orthopaedic Research Society, Chicago, 19-22 March 2006.
107. Tashjian RZ, Levanthal E, Spenciner DB, Green A, Fleming BC: Initial fixation strength of repairs of massive rotator cuff tears. Orthopaedic Research Society, Chicago, 19-22 March 2006.
108. Teeple E, Fleming BC, Mechrefe AP, Brady MF, Jay GD, Crisco JJ, Gomez ND: The frictional properties of Hartley guinea pig knees with and without simulated osteoarthritis using a modified Stanton pendulum. Orthopaedic Research Society, Chicago, 19-22 March 2006.
109. Chan CM, Ciombor D McK, Fleming BC, Rotenberg J, Aaron RK: Reconstitution of proteoglycans in human osteoarthritic knee cartilage and its biomechanical consequences. Orthopaedic Research Society, Chicago, 19-22 March 2006.
110. Fleming BC, Tung GA, Trafton T, Fadale PD, Hulstyn MJ, Kimia BB: Metallic interference screws do not affect quantitative measurements of cartilage volume using MRI following ACL surgery. Orthopaedic Research Society, Chicago, 19-22 March 2006.
111. Bradley MP, Brady M, Banerjee R, Hulstyn MJ, Fadale PD, Fleming BC: The Effect of Initial Graft Tension on the Tibiofemoral Compressive Forces in the Human Knee. American Orthopaedic Society for Sports Medicine, Chicago, 25 March 2006.
112. Tashjian RZ, Levanthal E, Spenciner DB, Green A, Fleming BC: Initial Fixation Strength of Repairs of Massive Rotator Cuff Tears. American Academy of Orthopaedic Surgeons, Chicago, 22-26 March 2006.
113. Bradley MP, Brady M, Banerjee R, Hulstyn MJ, Fadale PD: Compression force and laxity differences using different initial graft tensioning techniques in the

- human cadaver ACL reconstructed knee. Arthroscopy Association of North America. Hollywood FL, 18-21 May 2006.
114. Langer P, Fleming BC, Spenciner D, Hulstyn MJ: *In Vitro* Study of Hamstring Graft Morphometry and an Intraoperative Technique to Avoid Premature Amputation when Harvesting the Graft for ACL Reconstruction. Arthroscopy Association of North America. Hollywood FL, 18-21 May 2006.
  115. Langer P, Fadale PD, Hulstyn MJ, Fleming BC: International Survey of the AANA and AOSSM Membership Regarding Medrol Dosepak Use for Sports Injuries. American College of Sports Medicine, Denver CO, 31 May – 3 June 2006.
  116. Trinh N, Lester J, Fleming BC, Tung GA, Kimia B: Accurate Measurements of Cartilage Morphology using a 3D Laser Scanner. 2<sup>nd</sup> International Workshop on Computer Vision Approaches to Medical Image Analysis. Graz Austria, 12 May 2006.
  117. Drewniak EI, Crisco JJ, Spenciner DB, Fleming BC: Accuracy of contact area measurements with thin-film pressure sensors. American Society of Biomechanics, Blacksburg VA, 6-9 September 2006.
  118. Teeple E, Fleming BC, Jay GD, Elsaid KA, Crisco JJ, Mechrefe AP: Coefficients of friction and cartilage damage in the guinea pig knee. VII International Symposium of Ligament & Tendon, San Diego, 10 February 2007.
  119. Elsaid KA, Fleming BC, Oksendahl HL, Fadale PD, Hulstyn MJ, Shalvoy RM, Warman ML, Jay GD: Synovial fluid lubricin concentrations are decreased following anterior cruciate ligament injury in humans is associated with increased cartilage damage. Orthopaedic Research Society, San Diego, 11-14 February 2007.
  120. Tocci SL, Tashjian R, Leventhal E; Spenciner D, Green A, Fleming BC: Biomechanical evaluation of single row arthroscopic rotator cuff repair technique versus open transosseous repair technique. Orthopaedic Research Society, San Diego, 11-14 February 2007.
  121. Elsaid KA, Fleming BC, Teeple E, Mechrefe AP, Jay GD: Decreased lubricin concentration in the synovial fluid lavages from Guinea pig joints following anterior cruciate ligament transaction is associated with increased cartilage damage. Orthopaedic Research Society, San Diego, 11-14 February 2007.
  122. Bowers ME, Tung GA, Fleming BC, Crisco JJ, Rey J: A novel method of quantifying meniscal resection with MRI. Orthopaedic Research Society, San Diego, 11-14 February 2007.
  123. Tocci SL, Tashjian R, Leventhal E; Spenciner D, Green A, Fleming BC: Biomechanical Evaluation of Single Row Arthroscopic Rotator Cuff Repair (ARCR) Technique. American Academy of Orthopaedic Surgeons, San Diego, 14-18 February 2007.
  124. Fleming BC, Bowers ME, Tung GA, Leventhal EL, Trinh N, Crisco JJ, Kimia BB: Effects of ACL interference screws on femorotibial cartilage thickness measurements using 1.5T and 3T MRI. Workshop on Imaging Based Measures of Osteoarthritis, Salzburg, 11-14 July 2007.
  125. Bowers ME, Fleming BC, Tung GA, Levanthal E, Trinh N, Crisco JJ, Kimia BB: Effects of ACL interference screws on articular cartilage thickness measurements with 1.5T and 3T MRI. American Society for Biomechanics, San Francisco, 22-25 August, 2007.

126. Langer P, Drewniak EI, Crisco JJ, Fleming BC, Paller D, DiGiovanni CW: Snowboarder Talus Fractures: Effect of Simulated Fracture Excision on Subtalar Contact, American Academy of Orthopaedic Surgeons, San Francisco, 5-9 March 2008.
127. Fleming BC, Elsaid KA, Jay GD: Lubricin and cartilage metabolism are altered following injury and reconstruction of the caprine anterior cruciate ligament. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
128. Fleming BC, Le N-AT: Measuring Fixed Charge Density of Articular Cartilage using Indentation Methods and Biochemical Analyses. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
129. Fleming BC, Teeple E, Jay GD, Crisco JJ: Viscous damping in a loaded joint articular pendulum may explain articular degeneration in an ACL transection injury model. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
130. Fleming BC, Murray MM, Carey JL, Spindler KP: Suture techniques that restore normal anteroposterior (AP) laxity of the knee after ACL transection: An *ex vivo* study. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
131. Elsaid KA, Fleming BC, Jay GD: Early changes in lubricin levels and its relationship to cartilage damage in an ACL-transection rat model. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
132. Elsaid KA, Fleming BC, Warman ML, Jay GD: Inhibition of the effects of TNF- $\alpha$  by etanercept preserves joint lubrication and decreases cartilage damage following an ACL injury. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
133. Bowers ME, Tung GA, Trinh N, Kimia BB, Crisco JJ, Fleming BC: Quantitative MRI using “LiveWire” to Measure Tibiofemoral Articular Cartilage Thickness. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
134. Sharp WK, Moore DC, Leventhal EL, Aslani K, Badger G, Fleming BC: Variations in the thickness of the subchondral bone plate and the apparent trabecular density of the goat tibial plateau. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
135. Wei L, Fleming BC, Sun X, Teeple E, Wu W, Jay GD, Elsaid KA, Luo J, Chen Q: A comparison of differential biomarkers of osteoarthritis with and without post-traumatic injury in the Hartley guinea pig model. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
136. Drewniak EI, Jay GD, Fleming BC, Cha C-J, Warman ML, Crisco JJ: Cartilage wear testing of intact mutant PRG4 mouse knees with a pendulum system. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
137. Teeple E, Fleming BC, Jay GD, Crisco, JJ: The coefficient of friction of the articular pendulum is not independent of mass. Orthopaedic Research Society, San Francisco, 2-5 March 2008.
138. Murray MM, Palmer M, Hootnick J, Abreu E, Spindler KP, Fleming BC: Biomechanical validation of the porcine ACL transection model: An *in vivo* study. ACL Study Group, Engelberg, 23-28 March 2008.
139. Miranda DL, Rainbow MJ, Brainerd EL, Fleming BC: Tracking 3D kinematics of healthy and ACL-transected goat knee joints *in vivo*: A preliminary Study. IEEE Northeast Bioengineering Conference, Providence, 4-6 April 2008.
140. Portney R, Tung GA, Fadale PD, Hulstyn MJ, Bowers ME, Oksendahl HL, Fleming BC: A preliminary study of delayed gadolinium enhanced MRI of

- cartilage (dGEMRIC) after acute ACL injury. IEEE Northeast Bioengineering Conference, Providence, 4-6 April 2008.
141. Fleming BC, Carey JL, Spindler KP, Murray MM: Suture techniques can restore normal anteroposterior (AP) laxity of the knee after ACL transection. Pediatric Orthopaedic Surgery of North America, Albuquerque, 1-3 May 2008.
  142. Murray MM, Palmer M, Abreu E, Spindler KP, Fleming BC: Primary repair of the ACL in the skeletally immature pig: A model for the human condition. Pediatric Orthopaedic Surgery of North America, Albuquerque, 1-3 May 2008.
  143. Bowers ME, Tung GA, Oksendahl HL, Hulstyn MJ, Fadale PD, Fleming BC: Quantifying meniscal volume and tibiofemoral cartilage thickness after partial meniscectomy. 2nd Annual Workshop on Imaging Based Measures on Osteoarthritis, Boston, 25-28 June 2008.
  144. Miranda DL, Rainbow MJ, Brainerd EL, Fleming BC: A Preliminary Study: Tracking 3D kinematics of the goat knee joint in-vivo. North American Congress on Biomechanics, Ann Arbor, 5-8 August 2008.
  145. Bowers ME, Tung GA, Oksendahl HL, MJ Hulstyn, PD Fadale, Fleming BC: Quantifying meniscal volume and articular cartilage thickness in patients treated with partial meniscectomy. North American Congress on Biomechanics, Ann Arbor, 5-8 August 2008.
  146. Drewniak E, Rainbow M, Jay GD, Fleming BC, Crisco JJ: Frictional properties of intact mutant PRG4 mouse knee articular cartilage. North American Congress on Biomechanics, Ann Arbor, 5-8 August 2008.
  147. Fleming BC, Spindler KP, Murray MM: Translational studies of enhanced ACL reconstruction. Tissue Engineering International & Regenerative Medicine Society. La Jolla, 7-10 December 2008.
  148. Plante MJ, Monchik KO, Yongpravat C, Hulstyn MJ, Fadale PD, Fleming BC: Contact Pressures and Joint Kinematics of Double vs Single Bundle ACL Reconstructions. American Association of Orthopaedic Surgeons, Las Vegas, 22-25 February 2009.
  149. Monchik KO, Plante MJ, Yongpravat C, Hulstyn MJ, Fadale PD, Fleming BC: Effects of single-bundle and double-bundle ACL reconstruction on tibiofemoral compressive stresses and joint kinematics under dynamic loading. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
  150. Murray MM, Palmer M, Magarian E, Abreu E, Zurakowski D, Spindler KP, Fleming BC: The effect of tibial suture fixation on enhanced ACL repair *in vivo* in the porcine model. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
  151. Fleming BC, Portney R, Tung GA, Fadale PD, Hulstyn MJ, Bowers ME, Machan JT, Oksendahl HL: Delayed gadolinium enhanced MRI of cartilage (dGEMRIC) following ACL injury. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
  152. Fleming BC, Vajapeyam S, Connolly SA, Magarian E, Spindler KP, Murray MM: The structural properties of an ACL autograft can be predicted using MRI. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
  153. Miranda DL, Rainbow MJ, Crisco JJ, Fleming BC: Standardized anatomical coordinate systems for 3-D bone models of the human knee. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.

154. Drewniak EI, Jay GD, Cha CJ, Warman ML, Fleming BC, Crisco JJ: Coefficient of friction of articular cartilage of intact *Prg4* mutant mouse knees increases with cyclic loading. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
155. Elsaid KA, Fleming BC, Jay GD: Comparison of early and late inhibition of TNF- $\alpha$  in restoring chondroprotection by lubricin in the ACL transection injury model. Orthopaedic Research Society, Las Vegas, 22-25 February 2009.
156. Tung GA, Mehan WA, Portnoy R, Fadale PD, Hulstyn MJ, Bowers ME, Oksendahl HL, Fleming BC: Delayed gadolinium-enhanced MR imaging of cartilage (dGEMRIC) after ACL tear. American Roentgen Ray Society, Boston, April 26-May 1, 2009.
157. Tompkins M, Monchik K, Plante M, Fleming BC, Fadale PD: Rotator cuff repair using knotless lateral anchors in suture bridge technique: Contact area and pressure analysis. Arthroscopy Association of North America, San Diego, April 30-May 3, 2009.
158. Monchik KO, Plante MJ, Yongpravat C, Hulstyn MJ, Fadale PD, Fleming BC: Effects of single-bundle and double-bundle ACL reconstruction on tibiofemoral compressive stresses and joint kinematics under dynamic loading. Arthroscopy Association of North America, San Diego, April 30-May 3, 2009.
159. Jay GD, Elsaid KA, Fleming BC: Comparison of early and late inhibition of TNF- $\alpha$  in restoring chondroprotection by lubricin in the ACL transaction injury model. Society for Academic Emergency Medicine, New Orleans, 14-17 May 2009.
160. Fleming BC, Spindler KP, Palmer M, Magarian E, Murray MM: A collagen-platelet composite improves the biomechanical properties of healing ACL allografts in a porcine model. The 2009 Cabaud Research Award Paper. American Orthopaedic Society for Sports Medicine, Keystone, 9-12 July 2009.
161. Drewniak EI, Jay GD, Fleming BC, Crisco JJ: The effects of cyclic loading on the coefficient of friction differs by gender in the articular cartilage of murine knee joints. American Society of Biomechanics, Hershey, 26-29 August 2009.
162. Jay GD, Fey T, Watkins B, McHugh K, Anderson S, Fleming BC, Zhang LX, Teeple E, Waller K, Elsaid KA: Intra-articular injection (tribosupplementation) with native and recombinant lubricin (PGR4) prevents cartilage degeneration in the rat ACL injury model. ACR/ARHP, Philadelphia, 16-21 October 2009.
163. Chang M-C, Trinh NH, Fleming BC, Kimia BB: Reliable fusion of knee bone laser scans to establish ground truth for cartilage thickness measurements. SPIE Medical Imaging, San Diego, 13-18 February 2010.
164. Oksendahl HL, Hulstyn MJ, Fadale PD, Shalvoy R, Fleming BC: One-year outcomes of ACL Reconstruction: Comparison of bone-patellar tendon-bone grafts, 4-stranded hamstring tendon grafts with matched control subjects. Combined Sections Meeting of the American Physical Therapy Society, 17-20 February 2010.
165. Teeple E, Elsaid K, Jay G, Zhang L, Badger G, Akelman M, Bliss T, Fleming BC: Preserving Joint Lubrication Delays Arthritis in the ACL-Deficient Rat Knee. ACL Study Group, Phuket, 20-26 February 2010.
166. Bowers ME, Tung GA, Oksendahl HL, Hulstyn MJ, Fadale PD, Fleming BC: Delayed Gadolinium-Enhanced MRI of Cartilage (dGEMRIC) 12 months after ACL reconstruction. Orthopaedic Research Society, New Orleans, 6-10 March 2010.



167. Murray MM, Magarian EM, Harrison SL, Fleming BC: Skeletal maturity significantly affects functional anterior cruciate ligament healing. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
168. Teeple E, Elsaid KA, Fleming BC, Jay GD, Zhang L, Badger GJ, Akelman M, Bliss T: Supplemental intra-articular lubricin with and without hyaluronic acid delays the progression of post-traumatic arthritis in the anterior cruciate ligament deficient rat knee. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
169. Akelman M, Teeple E, Crisco JJ, Fleming BC, Jay GD: The measurement of coefficient of friction in the articular pendulum: On the effects of mass. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
170. Teeple E, Aslani K, Shalvoy M, Brody J, Zhang L, Fleming BC, Jay GD: Intervertebral disc apparent torsional modulus is elevated in lubricin knockout mice. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
171. Drewniak EI, Jay GD, Warman ML, Fleming BC, Crisco JJ: Cyclic loading increases friction and articular cartilage damage in lubricin deficient mice. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
172. Jay GD, Nir R, Fey T, Watkins B, McHugh K, Anderson S, Fleming B, Zhang L, Teeple E, Waller K, Elsaid, KA: Tribosupplementation with native lubricins (PRG4) and recombinant lubricin prevents cartilage degeneration and lowers urinary CTXII in the rat ACL injury model. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
173. Miranda DL, Brainerd EL, Fleming BC, Crisco JJ: Accuracy and Precision of 3-D Skeletal Motion Capture Technology. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
174. Vavken P, Saad FA, Fleming BC, Murray MM: VEGF in tissue-engineering enhanced primary ACL repair. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
175. Murray KS, Mosquera R, Mastrangelo AN, Fleming BC, Murray MM: The effect of platelet concentration on anterior cruciate ligament healing. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
176. Bilgen B, Chu D, Aslani K, Fleming B, Aaron RK, Ciombor DM: Hypoxia and co-culture of chondrocytes and synovial fibroblasts improve chondrogenic differentiation. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
177. Bilgen B, Decoteau D, Aslani K, Fleming B, Mathiowitz E, Aaron RK, Ciombor DM: TGF- $\beta$ 1 delivery by PLGA microspheres in hypoxia for chondrogenesis. Orthopaedic Research Society, New Orleans, 6-10 March 2010.
178. Elsaid KA, Jay GD, Fleming BC, McHugh K, Anderson S: Disease modifying effects of tribosupplementation with synoviocyte lubricin coupled with inhibition of TNF- $\alpha$  in an ACL injury model. European League Against Rheumatism, Rome, 16-19 June 2010.
179. Drewniak EI, Jay GD, Fleming BC, Zhang L, Warman ML, Crisco JJ: *Prg4* +/- Mouse Knee Joints Show the Largest Response to Cyclic Loading when Compared to *Prg4* +/+ and -/- Joints. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
180. Vavken P, Mastrangelo AN, Fleming BC, Murray MM: Enhanced primary ACL repair and ACL reconstruction have equivalent functional outcomes in a porcine model. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.

181. Miranda DL, Gosselin MM, Brainerd EL, Fleming BC: Gender differences in human knee function during maneuvers commonly associated with non-contact ACL Injury. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
182. Jay GD, Zhang L, Waller K, McHugh K, Anderson S, Fleming BC, Elsaid KA: Single dose tribosupplementation with human synoviocyte lubricin lowers urinary CTXII and preserves symmetric weightbearing in the rat ACL transection OA model. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
183. Elsaid KA, Zhang L, Fleming BC, Teeple E, Waller K, Jay GD: Forced joint mobilization reduces lubricin biosynthesis from cartilage and increases cartilage degeneration in the rat ACL injury model. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
184. Bowers ME, Tung GA, Machan JT, Murray MM, Fleming BC: Quantitative MRI of tibiofemoral articular cartilage in a porcine model of ACL reconstruction. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
185. Bowers ME, Tung GA, Oksendahl HL, Hulstyn MJ, Fadale PD, Machan JT, Fleming BC: Quantitative MRI can reliably determine tibiofemoral articular cartilage thickness *in vivo*. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
186. Waller KA, Elsaid KA, Warman M, Fleming BC, Jay GD: Lubricin reduces *in vitro* chondrocyte apoptosis in bovine cartilage bearings. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
187. Proffen BL, Murray MM, McElfresh M, Fleming BC: Anatomy of the cruciate ligaments and menisci in seven species. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
188. Bilgen B, Chu D, MacKay C, Aslani K, Fleming B, Ciombor DM, Aaron RK: Design of a biaxial loading device for cartilage tissue engineering. Orthopaedic Research Society, Los Angeles, 13-16 January 2011.
189. Miranda DL, Gosselin MM, Brainerd EL, Fleming BC: Gender differences in human knee function during maneuvers commonly associated with non-contact ACL injury. American Academy of Orthopaedic Surgeons, San Diego, 15-19 February 2011.
190. Bowers ME, Tung GA, Oksendahl HL, Hulstyn MJ, Fadale PD, Fleming BC: Delayed gadolinium-enhanced MRI of cartilage (dGEMRIC) after ACL reconstruction. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Rio de Janeiro, 8-12 May 2011.
191. Murray MM, Magarian E, Harrison S, Mastrangelo A, Zurokowski D, Fleming BC: Skeletal maturity significantly affects functional ACL Healing using PRP. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Rio de Janeiro, 8-12 May 2011.
192. Magarian E, Fleming BC, Harrison S, Mastangelo A, Murray MM: Delay of 2 or 6 weeks adversely effects the functional outcome of augmented primary repair of the ACL using PRP. International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine, Rio de Janeiro, 8-12 May 2011.
193. Murray MM, Vavken P, Palmer R, Proffen B, Fleming BC: Primary repair of the anterior cruciate ligament using a bio-active scaffold in a mature ovine model: A preliminary study. Veterinary Orthopedic Society Conference, Snowmass, 5-12 March, 2011.

194. Miranda DL, Schwartz JB, Dawson MM, Fleming BC, Crisco JJ: Markerless tracking error of a bi-planar x-ray motion capture system. American Society of Biomechanics, Long Beach, 10-13 August, 2011.
195. Miranda DL, Rainbow ML, Crisco JJ, Fleming BC: Biplanar X-ray derived ACL excursions during a jump-cut maneuver associated with ACL injury. International Symposium of Ligament and Tendon, San Francisco, 3 February 2012.
196. Biercevicz AM, Miranda DL, Murray MM, Machan JT, Fleming BC: MRI derived morphology and signal intensity to determine structural properties of an ACL reconstruction graft of ACL primary repair at one year in the porcine model. International Symposium of Ligament and Tendon, San Francisco, 3 February 2012.
197. Biercevicz AM, Miranda DL, Murray MM, Machan JT, Fleming BC: T2 weighted MRI derived morphology and signal intensity to determine structural properties of an ACL reconstruction graft in a porcine model. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
198. Miranda DL, Rainbow ML, Crisco JJ, Fleming BC: Kinematic differences between biplanar X-ray and external retro-reflective motion capture technologies. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
199. Vavken V, Fleming B, Machan J, Murray M: Effects of suture choice on biomechanics and physeal status after bio-enhanced ACL repair in skeletally immature patients - A large animal study. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
200. Elsaid KA, Zhang L, Waller K, Fleming BC, Jay GD: The chondroprotective effect of a single-dose lubricin tribosupplementation following ACL transection and strenuous exercise in the rat. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
201. Tofte J, Elsaid KA, Zhang LX, Waller KA, Fleming BC, Jay G: Exercise in ACL-transected rats increases cartilage roughness measured by a novel digital method. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
202. Wei X, Wei Y, Wang X, Fleming BC, Chen Q, Terek R, Wei L: A-2-Macroglobulin (A2M), a new marker and target for early diagnosis and therapy of osteoarthritis. Orthopaedic Research Society, San Francisco, 4-7 February 2012.
203. Vavken V, Fleming B, Machan J, Murray M: Biomechanical outcomes after bio-enhanced ACL repair and ACL reconstruction are equal in a porcine model. American Academy of Orthopaedic Surgeons, San Francisco, 7-10 February 2012.
204. Vavken V, Fleming B, Machan J, Murray M: Effects of suture choice on biomechanics and physeal status after bio-enhanced ACL repair- A large animal study. American Academy of Orthopaedic Surgeons, San Francisco, 7-10 February 2012.
205. Fleming BC, Machan JT, Shalvoy MR, Murray MM: A collagen-platelet composite to stimulate healing after ACL surgery also minimizes cartilage damage in the ACL injured knee. Osteoarthritis Research Society International, Barcelona, 26-29 April 2012.
206. Rainbow MJ, Miranda DL, Cheung RTH, Fleming BC, Davis IS: Automatic determination of a morphology-based anatomical coordinate system for the human patella. American College of Sports Medicine, San Francisco, 29-2 June 2012.

207. Rainbow MJ, Cheung RTH, Miranda DL, Schwartz JB, Crisco JJ, Davis IS, Fleming BC: Tracking high speed patella motion using biplanar videoradiography: An accuracy study. American Society of Biomechanics, Gainesville, 15-18 August 2012.
208. Murray MM, Fleming BC: Use of a bioactive scaffold to stimulate healing also minimizes post-traumatic osteoarthritis after surgery. Orthopaedic Research Society, San Antonio, 26-29 January 2013.
209. Miranda DL, Fadale PD, Hulstyn MJ, Shalvoy RM, Machan JT, Fleming BC: Knee kinematics & kinetics during a jump-cut maneuver: Effects of gender and ACL reconstructive surgery. Orthopaedic Research Society, San Antonio, 26-29 January 2013.
210. Biercevic AM, Walsh EG, Murray MM, Miranda DL, Fleming BC: Noninvasive prediction of healing ligament structural properties using MRI parameters of T2\* relaxation time and volume. Orthopaedic Research Society, San Antonio, 26-29 January 2013.
211. Coats-Thomas MS, Miranda DL, Fleming BC: Effects of gender and ACL reconstruction status on muscle activity of the lower limb during a jump-cut task. Orthopaedic Research Society, San Antonio, 26-29 January 2013.
212. Miranda DL, Rainbow MJ, Fleming BC: Bone surface interactions during a jump-cut maneuver: Effect of ACL reconstruction surgery. Orthopaedic Research Society, San Antonio, 26-29 January 2013.
213. Rainbow MJ, Miranda DL, Cheung R, Fleming BC, Davis IS: Patellofemoral kinematics during a jump-cut maneuver. American College of Sports Medicine, Indianapolis, 28 May-1 June 2013.
214. Christino MA, Fleming BC, Machan JT, Shalvoy RM: Psychological factors associated with ACL reconstruction recovery. American College of Sports Medicine, Indianapolis, 28 May-1 June 2013.
215. Rainbow MJ, Miranda DL, Cheung R, Fleming BC, Davis IS: Patellofemoral kinematics during a jump-cut maneuver. 3<sup>rd</sup> International Patellofemoral Pain Research Retreat, Vancouver, 18-20 Sept 2013.
216. Fleming BC, Proffen B, Vavken P, Shalvoy MR, Murray MM: Increased platelet concentration does not improve functional graft healing in bio-enhanced ACL reconstruction. ACL Study Group, Capetown South Africa, 26-30 Jan 2014.
217. Biercevic AM, Walsh EG, Murray MM, Akelman M, Fleming BC: T2\* mapping of ligaments: Can we improve computational time with relaxometry post-processing? Orthopaedic Research Society, New Orleans, 15-18 March 2014.
218. Fleming BC, Proffen B, Vavken P, Shalvoy MR, Machan JT, Murray MM: Increased platelet concentration does not improve functional graft healing in bio-enhanced ACL reconstruction. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
219. Teeple E, Larson K, Zhang L, Fleming BC, Jay GD: Arthroscopic irrigation of the bovine stifle joint increases cartilage surface friction and superficial zone chondrocyte apoptosis. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
220. Kiapour AM, Proffen B, Fleming BC, Murray MM: Restored tissue structural properties and knee joint laxity: Strong predictors of risk of post-traumatic knee osteoarthritis following ACL injury. Orthopaedic Research Society, New Orleans, 15-18 March 2014.

221. Proffen B, Fleming BC, Murray MM: Cellular organization as predictor of biomechanical properties of healing ACL and ACL graft after 6 and 12 months in vivo. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
222. Wang S, Li P, Wei X, Wei Y, Zhou J, Zhang J, Li K, Chen Q, Terek R, Fleming BC, Goldring MB, Ehrlich MG, Zhang G, Wei L: Identification of alpha 2 macroglobulin (a2m) as a master inhibitor to attenuate post-traumatic osteoarthritis cartilage degeneration. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
223. Klinge S, McClure PK, Paller D, Koruprolu S, Fleming BC, Hulstyn MJ, Fadale PD: In-vitro anatomic double-bundle and single-bundle anterior cruciate ligament reconstructions demonstrate equivalent laxity after time zero cyclic loading. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
224. Vopat B, Klinge S, McClure PK, Paller D, Koruprolu, Fleming BC, Hulstyn M, Fadale PD: Bone mineral density affects laxity in anatomic single bundle ACL reconstructions under cyclic loading. Orthopaedic Research Society, New Orleans, 15-18 March 2014.
225. Klinge S, McClure PK, Paller D, Koruprolu S, Fleming BC, Hulstyn MJ, Fadale PD: In-vitro anatomic double-bundle and single-bundle anterior cruciate ligament reconstructions demonstrate equivalent laxity after time zero cyclic loading. Arthroscopy Association of North America, Hollywood, 1-3 May 2014.
226. Jones MH, Reincke EK, Duryea J, Fleming BC, Scaramuzza E, Obuchowski N, MOON Group, Spindler KP: Meniscus treatment and age predict medial compartment joint space difference at a minimum of two years after ACL reconstruction: Data from the MOON onsite cohort. Osteoarthritis Research Society International, Paris, 24-27 April 2014.
227. Kiapour AM, Fleming BC, Murray MM: ACL multi-planar alignment affects the risk of post-traumatic osteoarthritis following ACL surgery: An in vivo large animal study. 7<sup>th</sup> World Congress of Biomechanics, Boston, 6-11 July 2014.
228. Kiapour AM, Fleming BC, Murray MM: Sex influences graft strength and knee laxity after ACL reconstruction in a pre-clinical model. AAOS/CORR/ORS/CMH-UCD/SWHR Musculoskeletal Sex Differences Throughout the Lifespan Research Symposium, Rosemont, 30 July-1 August, 2014.
229. Larson K, Elsaid K, Schmidt T, Fleming BC, Jay GD: Tribology of IL-1 stimulated cartilage explants: Restoration of chondroprotection by rhPRG4. Military Health Research Symposium, Ft Lauderdale, 18-21 August, 2014.
230. Larson K, Elsaid K, Schmidt T, Fleming B, Jay GD: Tribology of IL-1 stimulated cartilage explants: Restoration of chondroprotection by rhPRG4. Biomedical Engineering Society, San Antonio, 22-25 October, 2014.
231. Biercevicz AM, Akelman M R, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Tung GA, Oksendahl HL, Fleming BC: MRI derived parameters of volume and signal intensity predict clinical, functional and patient-oriented outcome measures following ACL reconstruction. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
232. Kiapour AM, Fleming BC, Murray MM: The effect of sex on the biomechanical outcomes of bio-enhanced anterior cruciate ligament repair: A large animal pre-clinical study. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.

233. Kiapour AM, Fleming BC, Murray MM: Sex influences the biomechanical outcomes of anterior cruciate ligament reconstruction in a pre-clinical large animal model. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
234. Kiapour AM, Shalvoy MR, Murray MM, Fleming BC: The porcine knee as a sex-specific model to study human anterior cruciate ligament pathology. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
235. Robbins ER, Patel TK, Rainbow MJ, Fleming BC: Kinematic accuracy of CT-based and MRI-based bone models for model-based tracking when using biplanar videoradiography to measure knee joint kinematics. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
236. Chin KE, Patel TK, Moore DC, Akelman MR, Proffen BL, Murray MM, Fleming BC: Comparison of Micro-CT sampling methods for the analysis of trabecular bone density in a rat ACL-transection model. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
237. Proffen BL, Vavken P, Fleming BC, Haslauer CM, Harris C, Machan JT, Murray MM: Whole blood stimulates ACL repair in pigs as effectively as mesenchymal stem cells. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
238. Sieker JT, Ayturk UM, Proffen BL, Fleming BC, Murray MM: Early changes in synovial protease gene expression after surgical induction of post-traumatic osteoarthritis in a porcine large animal model. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
239. Perrone GS, Proffen BL, Fleming BC, Sieker JT, Kramer J, Hawes ML, Badger GJ, Murray MM: Effect of two terminal sterilization techniques on the functional performance of extracellular matrix scaffolds. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
240. Perrone GS, Proffen BL, Fleming BC, Sieker JT, Kramer J, Hawes ML, Badger GJ, Murray MM: Effect of electron beam sterilization on the *in vivo* function of extracellular matrix scaffolds. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
241. Larson K, Elsaid K, Schmidt T, Fleming B, Jay G: Restoration of chondroprotection by rhPRG4 in IL-1 $\alpha$  stimulated cartilage explants. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
242. Du G, Wei F, Zhang J, Wei X, Reginato AM, Fleming BC, Bilgen B, Wei L: Abnormal mechanical loading induces cartilage degeneration by accelerating meniscus hypertrophy and mineralization after ACL injury *in vivo*. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
243. Ayturk UM, Haslauer CM, Bennike T, Sieker JT, Proffen BL, Warman ML, Fleming BC, Murray MM: A transcriptomic and proteomic analysis of acute changes in a pig model of post-traumatic osteoarthritis. Orthopaedic Research Society, Las Vegas, 28-31 March 2015.
244. Sieker JT, Ayturk UM, Proffen BL, Fleming BC, Murray MM: Early intraarticular triamcinolone acetone administration alters anterior cruciate ligament injury-induced changes in synovial membrane gene expression. Osteoarthritis Research Society International, Seattle, 30 April – 3 May 2015.
245. Jones MH, Spindler KP, Fleming BC, Duryea J, Obuchowski NA, Scaramuzza EA, Oksendahl HL, Winalski CS, Duong CL, Huston LJ, Parker RD, Kaeding CC, Andrish JT, Flanigan DC, Dunn WR, Reinke EK: Predictors of lateral compartment joint space difference two or more years after ACL reconstruction:

- Data from the MOON onsite cohort. Osteoarthritis Research Society International, Seattle, 30 April – 3 May 2015.
246. Proffen BL, Sieker JT, Murray MM, Chin KE, Patel TK, Robbins E, Akelman MR, Machan JT, Fleming BC: Injection of extracellular matrix gel following anterior cruciate ligament injury mitigates osteoarthritic changes in a rat model. Osteoarthritis Research Society International, Seattle, 30 April – 3 May 2015.
  247. Sieker J, Ayturk U, Proffen B, Fleming B, Murray M: The molecular effects of early intra-articular triamcinolone administration after anterior cruciate ligament injury. 32<sup>nd</sup> AGA Congress, Dresden, 17-19 Sept 2015.
  248. Akelman MR, Fadale PD, Hulstyn MJ, Shalvoy RM, Garcia A, Chin KE, Badger GD, Duryea J, Tung GA, Fleming BC: The effect of initial graft tension after anterior cruciate ligament (ACL) reconstruction: A randomized clinical trial (NCT00434837) with 84-Month follow-up. Orthopaedic Research Society, Orlando, 5-8 March 2016.
  249. Chin KE, Akelman MR, Karamchedu P, Waller KA, Kiapour A, Proffen BL, Sieker JT, Murray MM, Fleming BC: Evaluation of gait as a tool to assess longitudinal healing of ACL-reconstruction in a porcine model. Orthopaedic Research Society, Orlando, 5-8 March 2016.
  250. Waller KA, Teeple E, McAllister SC, Schmidt TA, Jay GD, Fleming BC: Intra-articular rhPRG4 mitigates cartilage damage following DMM in a porcine model. Orthopaedic Research Society, Orlando, 5-8 March 2016.
  251. Larson K, Elsaid K, Schmidt T, Fleming BC, Jay G: Restoration of PRG4 mRNA and chondroprotection by rhPRG4 in IL-1 $\alpha$  stimulated cartilage explants. Orthopaedic Research Society, Orlando, 5-8 March 2016.
  252. Rohan AC, Rubin LE, Biercevicz AM, Badger GJ, Fleming BC: Assessing Ligament Degeneration Using an Alternative Histological Method. Orthopaedic Research Society, Orlando, 5-8 March 2016.
  253. Fleming BC, Akelman MR, Fadale PD, Hulstyn MJ, Garcia A, Chin KE, Shalvoy RM, Tung GA: The effect of initial graft tension after anterior cruciate ligament (ACL) reconstruction: A randomized clinical trial with 7-year follow-up. ACL Study Group. Are Sweden 13-17 March 2016.
  254. Murray MM, Flutie B, Fleming BC, Micheli L: Bridge-enhanced ACL repair: Early results of the first in human study. ACL Study Group. Are Sweden 13-17 March 2016.
  255. Waller K, Zhang L, Teeple E, McAllister S, Schmidt T, Fleming BC, Jay G: Recombinant lubricin reduces joint damage and inflammation following traumatic injury. Osteoarthritis Research Society International, Amsterdam, 30 March – 3 April 2016.
  256. Sieker JT, Proffen BL, Kiapour AM, Waller K, Chin K, Karamchedu NP, Murray MM, Fleming BC: Loss of articular cartilage glycosaminoglycans is associated with enrichment of cartilage and bone developmental processes in the synovium in post-traumatic osteoarthritis. AAOS/ORS Tackling Joint Disease by understanding Crosstalk between Cartilage and Bone Research Symposium, Rosemont, 28-30 April 2016.
  257. Jones MH, Reinke EK, Duryea J, Fleming BC, Obuchowski NA, Winalski CS, Spindler KP: Predictors of lateral compartment joint space difference at a minimum of two years after ACL reconstruction: Data from the Moon onsite



- cohort. American Orthopaedic Society of Sports Medicine, Colorado Springs, 7-10 July 2016.
258. Clouthier AL, Fleming BC, Miranda DL, Deluzio KJ, Rainbow MJ: Effects of bone morphometry on in vivo knee kinematics and contact mechanics. Canadian Society for Biomechanics, Hamilton, Ontario, 19-22 July 2016.
  259. Ashall MF, Clouthier A, Fleming BC, Davis IS, Rainbow MJ: Gait retraining alters elongation of the medial patellofemoral ligament: A pilot study. Canadian Society for Biomechanics, Hamilton, Ontario, 19-22 July 2016.
  260. Beveridge JE, Walsh EG, Murray MM, Fleming BC: Sensitivity of ACL volume and MR T2\* characteristics to MR scan parameters. Gordon Conference on Musculoskeletal Biology & Bioengineering. Andover, 7-12 August 2016.
  261. Kiapour AM, Sieker JT, Proffen BL, Fleming BC, Murray MM: Treatment related changes in synovial fluid proteome in posttraumatic osteoarthritis following ACL injury reveals new potential biomarkers and treatment targets: A proteomic analysis of porcine knee. Orthopaedic Research Society, San Diego 19-22 March 2017.
  262. Beveridge JE, Walsh EG, Murray MM, Fleming BC: Sensitivity of ACL volume and MR T2\* characteristics to MR scan parameters. Orthopaedic Research Society, San Diego 19-22 March 2017.
  263. Proffen BL, Sieker JT, Ayturk UM, Fleming BC, Murray MM: Early proteolytic response of the anterior cruciate ligament after injury. Orthopaedic Research Society, San Diego 19-22 March 2017.
  264. Sieker JT, Proffen BL, Kiapour AM, Waller K, Chin K, Karamchedu NP, Konrad J, Murray MM, Fleming BC: RNA-Seq of site-matched synovium and articular cartilage to define the response to anterior cruciate ligament injury and identify gene expression related to glycosaminoglycan loss in post-traumatic osteoarthritis. Orthopaedic Research Society, San Diego 19-22 March 2017.
  265. Ware JK, Owens BD, Fadale PD, Hulstyn MJ, Akelman MR, Fleming BC: Predictors of a symptomatic knee following ACL reconstruction: 84-month follow up. American Orthopaedic Society for Sports Medicine, Toronto 20-23 July 2017.
  266. Micheli LJ, Flutie B, Fleming BC, Murray MM: Bridge-enhanced ACL Repair: Mid-term Results of the First-in-human Study. American Orthopaedic Society for Sports Medicine, Toronto 20-23 July 2017.
  267. Beveridge J, Machan J, Walsh E, Kiapour A, Karamchedu NP, Chin K, Proffen B, Sieker J, Murray M, Fleming BC: The combination of tissue collagen quantity and quality estimated from MR T2\* relaxometry predicts time-specific structural properties of healing ACL following ACL repair. American Society of Biomechanics, Boulder 8-11 August 2017.
  268. Fleming BC, Beveridge JE, Kiapour AM, Murray MM: Non-invasive assessment of healing following ACL surgery. ACL Study Group, Queenstown NZ 28 Jan – 1 Feb 2018.
  269. Fleming BC, Ware JK, Akelman MR, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Owens BD: Preoperative patient reported outcomes predict the development of symptomatic knee osteoarthritis following ACL reconstruction surgery at 7-year follow-up. Orthopaedic Research Society, New Orleans 10-13 March, 2018. *ORS Tendon Section Member Poster Award Finalist.*

270. Beveridge JE, Proffen BL, Karamchedu NP, Chin KE, Sieker JT, Murray MM, Fleming BC: Cartilage damage is related to ACL stiffness in a porcine model of ACL repair. Orthopaedic Research Society, New Orleans 10-13 March, 2018.
271. Flannery SW, Fleming EN, Karamchedu NP, Behnke AL, Beveridge JE, Proffen BL, Sieker JT, Murray MM, Fleming BC: Assessing meniscus integrity post-ACL repair with MRI T<sub>2</sub>\* relaxometry. Orthopaedic Research Society, New Orleans 10-13 March, 2018.
272. Beveridge JE, Machan JT, Walsh E, Kiapour AM, Karamchedu NP, Chin KE, Proffen BL, Sieker JT, Costa M, Murray MM, Fleming BC: Structural properties of healing ACL predicted from MR T<sub>2</sub>\*, signal intensity, and ligament volume. Orthopaedic Research Society, New Orleans 10-13 March, 2018.
273. Fleming BC, Ware JK, Akelman MR, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Owens BD: Preoperative patient reported outcomes predict the development of symptomatic knee osteoarthritis following ACL reconstruction surgery at 7-year follow-up. Gordon Research Conference, Andover NH, 5-10 Aug 2018.
274. Kiapour AM, Yang D, Badger GJ, Karamchedu NP, Murray MM, Fadale PD, Hulstyn MJ, Shalvoy RM, Fleming BC: Anatomical predictors of clinical, patient-reported and OA-related outcomes of ACL reconstruction. Orthopaedic Research Society, Austin 2-5 Feb 2019.
275. Kiapour AM, Ecklund K, Murray MM, Fleming BC: MRI-based assessment of longitudinal changes in healing ligament structure within 2 years after ACL surgery. Orthopaedic Research Society, Austin 2-5 Feb 2019.
276. DeFroda SF, Karamchedu NP, Owens BD, Bokshan SL; Sullivan K, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Fleming BC: Tibial tunnel widening following anterior cruciate ligament reconstruction: A retrospective 7-year study evaluating the effects of initial graft tensioning and graft selection. Orthopaedic Research Society, Austin 2-5 Feb 2019.
277. Behnke AL, Karamchedu NP, Fleming BC, Beveridge JE: Muscle co-contraction indices of the lower limb are greater in ACL reconstructed patients compared to uninjured controls at 10-12 year follow-up. Orthopaedic Research Society, Austin 2-5 Feb 2019.
278. Flannery SW, Beveridge JE, Fleming EN, Costa MQ, Karamchedu NP, Behnke AL, Proffen BL, Sieker JT, Murray MM, Fleming BC: Longitudinal assessment of meniscus post-ACL repair with MRI T<sub>2</sub>\* relaxometry. Orthopaedic Research Society, Austin 2-5 Feb 2019.
279. DeFroda SF, Karamchedu NP, Owens BD; Bokshan SL, Sullivan K, Fadale PD, Hulstyn MJ, Shalvoy RM, Badger GJ, Fleming BC: Tibial tunnel widening following anterior cruciate ligament reconstruction: A retrospective 7 year study evaluating the effects of initial graft tensioning and graft selection. American Academy of Orthopaedic Surgeons, Las Vegas NV, 12-16 March 2019.
280. Murray MM, Kalish L, Fleming BC, Flutie B, Thurber L, Freiburger C, Henderson R, Perrone G, Proffen B, Kramer DE, Yen YM, Michali LJ: Bridge-enhanced ACL repair: Two-year results of the first in human study. American Academy of Orthopaedic Surgeons (AOSSM Specialty day), Las Vegas NV, 16 March 2019.
281. Jones MH, Oak SR, Andrish JT, Brophy RH, Cox CL, Duong CL, Dunn WR, Flanigan DC, Fleming BC, Huston LJ, Kaeding CC, Kolosky M, Kuyumcu G,

- Lynch TS, Magnussen RA, Matava MJ, Parker RD, Reinke EK, Scaramuzza EA, Smith MV, Winalski C, Wright RW, Zajichek A, Spindler KP: Predictors of radiographic osteoarthritis 2-3 years after ACL reconstruction: Data from the Multicenter Orthopaedic Outcomes Network onsite (MOON) nested cohort. Osteoarthritis Research Society International, Toronto, 2-5 May 2019.
282. Kiapour AM, Ecklund K, Murray MM, BEAR Trial Team, Fleming BC: Changes in cross-sectional area and signal intensity of healing ACLs and ACL grafts in the first two years after surgery. American Orthopaedic Society of Sports Medicine, Boston, 11-13 July 2019.
  283. Beveridge JE, Behnke AL, Karamchedu NP, Maldonados-Rodas C, Fleming BC: Predicted ACL graft stiffness explains variation in increased anterior tibial alignment in ACL-reconstructed subjects at 10-12 year follow-up. International Society of Biomechanics/American Society of Biomechanics, Calgary, 31 July - 4 August 2019.
  284. Flannery SW, Beveridge JE, Fleming EN, Costa MQ, Karamchedu NP, Behnke AL, Proffen BL, Sieker JT, Murray MM, Fleming BC: Machine learning model for predicting ACL failure load. International Society of Biomechanics/American Society of Biomechanics, Calgary, 31 July - 4 August 2019.
  285. Beveridge JE, Behnke AL, Maldonado Rodas C, Karamchedu NP, Flannery SW, Fleming BC: Relationship between predicted ACL graft stiffness and kinematics at 12-year follow-up. Orthopaedic Research Society, Phoenix, February 8-11, 2020.
  286. Flannery SW, Beveridge JE, Kiapour AM, Karamchedu NP, Behnke AL, Proffen BL, Sieker JT, Murray MM, Fleming BC: An improved T<sub>2</sub>\*-based prediction model for ACL failure load. Orthopaedic Research Society, Phoenix, February 8-11, 2020.
  287. Adler C, Newberry J, Desai S, Li N, Ortega J, Karamchedu NP, Fleming BC, Jayasuriya CT: SDF-1 preconditioned HPC scaffolds mobilize cartilage-derived progenitors and stimulate meniscal fibrocartilage reintegration in human explant tissue culture. Orthopaedic Research Society, Phoenix, February 8-11, 2020.
  288. Barnett SC, Murray MM, BEAR Trial Team, Fleming BC, Kiapour AM: ACL size but not signal intensity is influenced by sex, body size and knee anatomy. Orthopaedic Research Society, Phoenix, February 8-11, 2020.
  289. Fleming BC, Fadale PD, Hulstyn MH, Shalvoy RM, Tung GA, Badger, GJ: Long-term outcomes of ACL reconstruction surgery. The OREF Clinical Research Award, Orthopaedic Research Society, Phoenix, February 8-11, 2020.
  290. DeFroda DF, Karamchedu NP, Budackia R, Wiley T, Fadale PD, Hulstyn MJ; Shalvoy RM, Badger GJ, Fleming BC, Owens BD: Evaluation of graft tensioning effects in anterior cruciate ligament reconstruction between hamstring and bone-patellar tendon-bone autografts. American Academy of Orthopaedic Surgeons, Orlando, March 24-28, 2020.
  291. Flannery SW, Kiapour AM, Edgar DJ, Murray MM, Fleming BC: A Transfer learning approach for automatic segmentation of the surgically treated anterior cruciate ligament. Orthopaedic Research Society, Virtual, 12-16 February 2021.
  292. Flannery SW, Kiapour AM, Edgar DJ, Murray MM, Fleming BC: Automated magnetic resonance image segmentation of intact anterior cruciate ligaments. Orthopaedic Research Society, Virtual, 12-16 February 2021.

293. Kiapour AM, Portilla G, Murray MM, Fleming BC: Healing map: A novel Approach to track anterior cruciate ligament healing after surgery, Orthopaedic Research Society, Virtual, 12-16 February 2021.
294. Han M, Karimi D, Gholipour A, Murray MM, Fleming BC, Kiapour AM: CISS is a more sensitive sequence to track anterior cruciate ligament remodeling following surgical treatment compared to common clinical sequences. Orthopaedic Research Society, Virtual, 12-16 February 2021.
295. Kiapour AM, Portilla G, Murray MM, Fleming BC: Postoperative changes in signal intensity of the anterior cruciate ligament are location specific implicating variable tissue remodeling across the surgically treated ligament. Orthopaedic Research Society, Virtual, 12-16 February 2021.
296. Zandiyeh P, Parola LR, Fleming BC, Beveridge JE: Muscle activation patterns are chronically altered after anterior cruciate ligament reconstruction. Orthopaedic Research Society, Virtual, 12-16 February 2021.
297. Sun C, Cao C, Fleming BC, Owens BD, Beveridge JE, Mcallister S, Wei L: A2M inhibits catabolism by blocking IL-1 $\beta$ /NF- $\kappa$ B pathway. Orthopaedic Research Society, Virtual, 12-16 February 2021.
298. Sanborn RM, Badger GJ, The BEAR Trial Team\*, Yen YM, Murray MM, Christino MA: Psychological readiness to return to sport at 6 months is higher after bridge-enhanced ACL repair than autograft ACL reconstruction. Pediatric Research in Sports Medicine Meeting, Houston, 27-29 Jan 2022.
299. Costa MQ, Badger GJ, Chrostek CA, Carvalho OD, Fadale PD, Hulstyn MJ, Gil HC, Shalvoy RM, Fleming BC: Effect of patient sex and initial graft tension on knee osteoarthritis outcomes at 12 years after ACL reconstruction. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
300. Flannery SW, Walsh EG, Sanborn R, Chrostek C, Costa MQ, Kaushal S, Murray MM, Fleming BC, Kiapour AM: Differences in quantitative magnetic resonance imaging acquisition parameters for the anterior cruciate ligament require harmonization. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
301. Menghini D, Kaushal S, Flannery SW, Murray MM, Fleming BC, Kiapour AM: Cross-sectional profile of surgically treated anterior cruciate ligament is heterogenous across its length and influenced by notch width. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
302. Menghini D, Kaushal S, Flannery SW, Murray MM, Fleming BC, Kiapour AM: Three-dimensional MRI analysis shows sex-specific patterns in changes in anterior cruciate ligament cross-sectional area across its length. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
303. Pinette M, Fleming BC, Molino J, Proffen B, Murray MM: The effects of male and female sex on the development of posttraumatic osteoarthritis in a porcine knee following ACL surgery. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
304. Parola LR, Murray MM, Proffen BL, Sant NJ, Karamchedu NP, Costa MQ, Molino J, Pinette MP, Fleming BC: Treatment with an extracellular matrix-blood composite impacts animal gait without damaging joint structure in a Dunkin Hartley guinea pig model. **Preclinical Models Section 3R Award Finalist.** Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
305. Chang K, Sun C, Fleming BC, Owens BD, Gage A, Beveridge J, Mcallister S, Costa M, Pinette M, Wei L: A novel mechanically stable PTOA model of

- inflammation: Swine pilot study of drilling adjacent ACL attachment. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
306. Sun C, Chang K, Fleming BC, Owens BD, Gage A, Beveridge JE, Mcallister S, Costa M, Pinette M, Xiao Y, Wei L: Cartilage damage is associated with synovium inflammation: A novel porcine model of post-traumatic osteoarthritis. Orthopaedic Research Society, Tampa, 4-8 Feb 2022.
  307. Thome, AP, O'Donnell R, DeFroda SF, Cohen BH, Cruz AI, Fleming BC, Owens BD. The effect of skeletal maturity on fixation techniques for tibial eminence fractures. American Orthopaedic Association, Providence 14-18 June 2022.
  308. Sanborn R, Badger G, Fleming B, Kiapour A, BEAR Trial Team, Murray MM, Yen YM, Kramer D: Preoperative risk factors of subsequent ipsilateral ACL revision surgery following an ACL restoration procedure. Pediatric Research in Sports Medicine Society, Denver 2-4 Feb 2023.
  309. Barnes DA, Flannery SW, Badger GJ, Yen YM, Micheli LJ, Kramer DE, Fadale PD, Hulstyn MJ, Owens BD, Ecklund K, Sanborn RM, Costa MQ, Chrostek C, Proffen BL, Sant N, Murray MM, Fleming BC, Kiapour AM: Quantitative MRI biomarkers to predict risk of reinjury within 2 years after Bridge-Enhanced ACL Restoration. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  310. Barnes DA, Green J, Uzzo C, Kiapour AM, Murray MM, Fleming BC, Flannery SW: Post-surgical artifact correction in MR imaging by deep neural networks. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  311. Kaushal SG, Kim J-Y, Singh M, Flannery SW, Murray MM, Fleming BC, Kiapour AM: MRI-Based Texture Analysis to Track Anterior Cruciate Ligament Healing Within Two Years After Surgery. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  312. Singh M, Han M, Karimi D, Flannery SW, Kim J-Y, Tavabi N, Murray MM, Gholipour-Baboli A, Fleming BC, Kiapour AM: LigaNET: A Multi-Modal Deep Learning Approach to Predict the Risk of Subsequent Anterior Cruciate Ligament Injury After Surgery. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  313. Chang K, Sun C, Fleming BC, Owens BD, Beveridge JE, McAllister S, Costa MQ, Pinette MP, Molino J, Wei L:  $\alpha$ 2-macroglobulin reduces post-traumatic osteoarthritis cartilage degeneration by inhibiting catabolic pathways. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  314. Sun C, Chang K, Fleming BC, Owens BD, Bruns R, Beveridge J, Mcallister S, Costa M, Pinette M, Ying X, Wei L: A2m reduces synovial inflammation in a Yucatan mini-pig PTOA model. Orthopaedic Research Society, Dallas, 10-14 Feb 2023.
  315. Donnenfield JI, Fleming BC, Murray MM: The varied genetic impact of medium-term anterior cruciate ligament injury on articular cartilage and synovium. OARSI World Congress on Osteoarthritis, Denver, 17-20 Mar 2023.
  316. Donnenfield JI, Proffen BL, Fleming BC, Murray MM: Gene expression remains more altered in synovium than in cartilage one year following ACL injury. American College of Sports Medicine, Denver, 30 May - 2 Jun, 2023.
  317. Breker AN, Badger GJ, Costa MQ, Chrostek CA, Fadale PD, Hulstyn MJ, Shalvoy RM, Gil HC, Fleming BC: Effect of initial graft tension on knee osteoarthritis outcomes after ACL reconstruction: A randomized controlled clinical trial with 15-year follow-up. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.

318. Beveridge JE, Hague M, Parola LR, Costa MQ, Molino J, Fleming BC: Static and dynamic constraint in ACL-reconstructed patients at 10- to 15-year follow-up. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.
319. Barnes DA, Kiapour AM, Beveridge JE, Fleming BC: ACL Specific signal intensity normalization across MRI sequences. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.
320. Murray CJ, Molino J, Costa M, Fleming BC, Beveridge JE: Approach to evaluate femoral cartilage thickness based on patient geometry. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.
321. Holtgrewe J, Fleming BC, Beveridge JE: Accuracy and precision of model-based bone tracking for a dynamic hop landing activity. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.
322. Sun C, Chang K, Fleming BC, Owens BD, Beveridge JE, Wei L: A2M attenuates cartilage degeneration by binding to and blocking the IL-1R1 cascade in a large preclinical pig model. Orthopaedic Research Society, Long Beach, 2-6 Feb 2024.
323. Lemme NJ, Badida R, Hague M, Molino J, Fleming BC, Owens BD: The effect of tibial slope on anterior cruciate ligament graft forces and knee stability with and without concomitant lateral extra-articular tenodesis. American Academy of Orthopaedic Surgeons, San Francisco 12-16 Feb 2024.
324. Jones M, Yalcin S, Andrish J, Brophy R, Cox C, Dunn W, Flanigan D, Fleming B, Jin Y, Kaeding C, Magnussen R., Matava M, Parker R, Reinke E, Sheean A, Smith M, Winalski C, Wright R, Spindler K: Do early radiographic changes at 2 years predict increased pain at 6 years after ACL reconstruction? American Orthopaedic Society for Sports Medicine, Denver 11-14 Jul 2024.
325. Lemme NJ, Badida R, Hague M, Molino J, Fleming BC, Owens BD: How steep is too steep? Assessing the limits of lateral extra-articular tenodesis and slope-reducing osteotomy on ACL graft force and knee stability. The 2024 Cabaud Research Award Paper, American Orthopaedic Society for Sports Medicine, Denver 11-14 Jul 2024.
326. Karamchedu PN, Breker AN, Costa MQ, Badger GJ, Fadale PD, Hulstyn MJ, Shalvoy RM, Gil HC, Schmidt TA, Fleming BC: Factors associated with the occurrence of posttraumatic osteoarthritis 15 years after anterior cruciate ligament reconstruction. Orthopaedic Research Society, Pheonix 8-10 Feb 2025.
327. Barnes DA, Kiapour AM, Beveridge JE, Murray CJ, Murray MM, Fleming BC: Precision imaging: Automated metal artifact segmentation in ACL MRIs using K-means clustering. Orthopaedic Research Society, Pheonix 8-10 Feb 2025.
328. Barnes DA, Kiapour AM, Beveridge JE, Movahhedi M, Murray CJ, Murray MM, Fleming BC: Sex differences in meniscal cross-sectional area profile. Orthopaedic Research Society, Pheonix 8-10 Feb 2025.
329. Desai S, Trivedi J, Boduch A, Adler C, Murray CJ, Fleming BC, Owens BD, Jayasuriya CT: Tear-filling bioactive cell carrier stimulates meniscal fibrocartilage mending in a Yucatan minipig model. Orthopaedic Research Society, Pheonix 8-10 Feb 2025.
330. Murray CJ, Molino J, Holtgrewe JD, Barnes DA, Zandiyeh P, Fleming BC, Beveridge JE: Muscle activity patterns during a single-leg hop landing in healthy males and females. Orthopaedic Research Society, Pheonix 8-10 Feb 2025.

331. Holtgrewe J, Murray C, Barnes DA, Molino J, Fleming BC, Beveridge JE: Robustness and bilateral symmetry of hop landing kinematics in healthy persons. Orthopaedic Research Society, Phoenix 8-10 Feb 2025.
332. Barnes DA, Murray CJ, Movahhedi M, Kiapour AM, Beveridge JE, Fleming BC: Regional variations in meniscal volume between sexes after ACL surgery. The Female Athlete Conference, Boston 4-6 Jun 2025.
333. Barnes DA, Kiapour AM, Beveridge JE, Movahhedi M, Murray CJ, Murray MM, Fleming BC: Sex-based variations in meniscal morphometry and contact mechanics following ACL reconstruction. American Society of Biomechanics, Pittsburgh 13-16 Aug 2025.

### INVITED PRESENTATIONS

1. “Rehabilitation Following Anterior Cruciate Ligament Reconstruction”, Seminars in Investigation Research. The Clinical Research Center of the University of Vermont and Fletcher Allen Health Care. 24 October 1997 (Local).
2. “Biomechanics of ACL Surgery”, Current Concepts in the Treatment and Rehabilitation of Sports Injuries, Burlington, 29-30 September 1994 (Regional).
3. “Biomechanics of ACL reconstruction” Current Concepts in the Treatment and Rehabilitation of Sports Injuries, Burlington, 2-4 October 1996 (Regional).
4. “Clinically Relevant Biomechanics Behavior of the ACL: What Do We Know Today?”, Current Concepts in the Treatment & Rehabilitation of Sports Injuries. Burlington, 1-2 Oct. 1998 (Regional).
5. “In Vivo Measurement of ACL Strain Biomechanics”, Sports Biomechanics Symposium. American Society of Biomechanics. Pittsburgh, 20-23 October 1999 (National).
6. “In vivo Measurement of ACL Strain Biomechanics”, Research Symposium. St. Goran Hospital. Stockholm, 20 January 2000 (International).
7. “Biomechanics of ACL Reconstruction”, Instructional Course Lecture: International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine. Montreux, 14-18 May 2001 (International).
8. “Knee Bracing”, Symposium: International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine. Montreux, 14-18 May, 2001. Also published in the ISAKOS Newsletter 5:1, 2001 (International).
9. “ACL Strain Behavior During Rehabilitation Exercises In Vivo”, Symposium: Knee Biomechanics During Rehabilitation Exercises. American College of Sports Medicine. Baltimore, May 30–June 2, 2001 (National).
10. “The Biomechanics of the Weight bearing Knee”, Knee Biomechanics Symposium. IVth. World Congress on Biomechanics. Calgary, 4-9 August 2002 (International).
11. “ACL Strain During Rehabilitation Exercises In Vivo”, Knee Ligament Symposium. IVth. World Congress on Biomechanics. Calgary, 4-9 August 2002 (International).
12. “Process Measurements in Sports Medicine”, Sports Medicine Conference. Burlington, 2-4 October 2002 (Regional).
13. “Accelerated versus non-accelerated rehabilitation following ACL reconstruction” Sports Medicine Conference. Burlington, 2-4 October 2002 (Regional).



14. “Biomechanics of healing ACL grafts”, Workshop entitled “ACL: Healing Following Injury, Reconstruction, and Rehabilitation”. Orthopaedic Research Society. New Orleans, 2-5 February 2003 (National).
15. “ACL Biomechanics” Research Retreat II on ACL Injuries: The Gender Bias.” Lexington, 4-5 April 2003 (National).
16. “The Role of Instrumented Laxity Testing in ACL Reconstruction”, Multicenter Orthopaedic Outcomes Network. Nashville, 17 May 2004 (National).
17. “Rehabilitation Exercises for the ACL Reconstructed Athlete”, National Athletic Trainers Association. Baltimore, 14-19 June 2004 (National).
18. “Biomechanics of ACL Reconstruction”, Instructional Course - Integrated ACL Research: Healing Following Injury, Reconstruction, and Rehabilitation. American Orthopaedic Society for Sports Medicine. Quebec City, 24-27 June 2004 (International).
19. “The Relationship Between Initial Graft Biomechanics and Changes in Knee Laxity During Healing”, International Society for Arthroscopy, Knee Surgery, and Sports Medicine. Hollywood, 3-7 April 2005 (International).
20. “Design evaluation criteria for tendon & ligament”, Gordon Conference on Musculoskeletal Biology & Bioengineering. Andover, 23-27 July 2006 (International).
21. “Treating the ACL-injured knee”, Keynote Address. Lifespan/Brown Medical School Research Celebration. Providence, 9 November 2006 (Regional).
22. “Tissue Engineering Evaluation Criteria for Musculoskeletal Tissue Repair”, Consensus Conference, Hilton Head, 25-29 April 2007 (National).
23. “Randomized Controlled Trials of ACL Reconstruction: Thoughts, Prelim Data & Other Considerations”, Multicenter Orthopaedic Outcomes Network. Nashville, 11 May 2007 (National).
24. “Reconstruction of the ACL using Biologically Enhanced Patellar Tendon Graft”, Multicenter Orthopaedic Outcomes Network. Iowa City, 26 October 2007 (National).
25. “Can We Prevent Osteoarthritis after an ACL Injury?”, Graduate Seminar, Departments of Bioengineering, Musculoskeletal Research Center, Orthopaedic Surgery, and the McGowan Institute for Regenerative Medicine at the University of Pittsburgh. Pittsburgh, 7 February 2008 (National).
26. “Can We Prevent Osteoarthritis after an ACL Injury?”, Grand Rounds, Harvard Medical School/Mass General Hospital, Boston, 20 February 2008 (National).
27. “Joint trauma with ACL injury: The beginning of the end?”, Symposium Lecture, ACL Study Group. Engelberg, 23-28 March 2008 (International).
28. “Can We Prevent Osteoarthritis after an ACL Injury?”, Research Seminar, Children’s Hospital Boston, Boston, 14 March 2008 (National).
29. “New Horizons in the Care of Patients with ACL Injury: ACL injury and Osteoarthritis”, University of Cincinnati, Cincinnati, 6-7 November 2008 (National).
30. “Tendon & Ligament: Anatomy & Biomechanics”, HST020 (Musculoskeletal Pathophysiology); Harvard Medical School, Boston, 9 January 2009.
31. “Can We Prevent Osteoarthritis after an ACL Injury?”, Orthopaedic Grand Rounds, Lahey Clinic, Burlington, 11 February 2009 (National).

32. “ACL Reconstruction: Can We Improve on a Great Operation?”, Orthopaedic Grand Rounds, University of Pittsburgh, Pittsburgh, 30 September 2009 (National).
33. “Supplemental intra-articular lubricin with and without hyaluronic acid delays the progression of post-traumatic arthritis in the anterior cruciate ligament deficient rat knee”, Gordon Conference on Musculoskeletal Biology & Bioengineering. Andover, 3 August 2010 (International).
34. “Can We Prevent Osteoarthritis After ACL Injury?”, Research Seminar, Dept of Biomedical Engineering, Tufts University. Medford, 31 January 2011 (National).
35. “Can We Prevent Osteoarthritis After ACL Injury?”, Orthopaedic Grand Rounds, Duke University, Durham, 30 March 2011 (National).
36. “Mechanisms of Post-Traumatic Osteoarthritis in the ACL-deficient Knee”, Research Seminar, Dept of Biomedical Engineering, Duke University, Durham, 30 March 2011 (National).
37. “Mechanisms of Post-Traumatic Osteoarthritis in the ACL-Injured Knee”, Research Seminar, Kobe University Hospital, Kobe, Japan, 13 June 2011 (International).
38. “Mechanisms of Post-Traumatic Osteoarthritis in the ACL-Injured Knee”, Research Seminar, Hiroshima University Hospital, Hiroshima, Japan, 14 June 2011 (International).
39. “Can We Prevent Osteoarthritis After ACL Injury?”, Keynote Lecture, 3<sup>rd</sup> Annual Meeting of the Japanese Orthopaedic Society of Knee, Arthroscopy and Sports Medicine, Sapporo, Japan, 16 June 2011 (International).
40. “Can We Prevent Osteoarthritis After ACL Injury?”, Research Seminar, University of Calgary, Calgary, 3 October 2011 (International).
41. “Can We Prevent Osteoarthritis After ACL Injury?”, Grand Rounds, University of Massachusetts Medical School, Worcester, 14 December 2011 (National).
42. “Biological Approaches for OA Prevention after ACL Injury”, ACL Study Group, Jackson Hole, 12-16 February 2012 (International).
43. “Traveling Scientist Report: Phuket to Jackson Hole”, ACL Study Group, Jackson Hole, 12-16 February 2012 (International).
44. “The Effect of Initial Graft Tension after ACL Reconstruction”, Grand Rounds, University of Vermont, Burlington, 13 June 2013 (National).
45. “Can We Prevent Osteoarthritis After ACL Injury?”, Visiting Professor Lectureship, University of Vermont, Burlington, 14 June 2013 (National).
46. “The Effects of Initial Graft Tension after ACL Reconstruction with a Focus on Post-traumatic Arthritis”, Grand Rounds, Rhode Island Hospital, Providence, 11 September 2013 (Local).
47. “The Etiology and Pathophysiology of Early OA following ACLR”, Symposium: The Early Development of Osteoarthritis following ACLR: Can It Be Prevented?” ACL Study Group, Capetown, 26-30 January 2014 (International).
48. “Biologics for the Treatment of ACL Injuries: Implications and Future Directions”, New England Sports and Orthopedic Rehabilitation Summit 2014; Advances in Rehabilitation of the Lower Extremity, Providence, 5 April 2014 (Local).
49. “Randomized Control Trials – ACL Tension Study”, Multicenter Orthopaedic Outcomes Network Meeting, Cleveland, 2 May 2014 (National).

50. “MRI and ACL Graft Healing”, Multicenter Orthopaedic Outcomes Network Meeting, Cleveland, 2 May 2014 (National).
51. “Osteoarthritis Following ACL Reconstruction: Can We Improve Outcomes?”, Human Performance Lab Musculoskeletal Research Seminar Series, University of Calgary, Calgary 29 May 2014 (International).
52. “Osteoarthritis After ACL Injury: Can We Improve Outcomes?”, Grand Rounds, Steadman Philippon Research Institute, Vail 20 October 2014 (National).
53. “Osteoarthritis Following ACL Reconstruction: Can We Improve Outcomes?”, Research Seminar, University of Delaware, Newark, 8 April 2015 (National).
54. “Assessing Outcomes of ACL Surgery”, ACLR Outcomes Symposium, 2016 Annual Meeting of the American Orthopaedic Society for Sports Medicine, Colorado Springs 9 July 2016 (National).
55. “How Important is Initial Graft Tension on ACL Outcomes”, German Arthroscopy and Joint Surgery Society, Basel 15-17 September 2016 (International).
56. “Advances in ACLR—Future Surgical and Bioengineering Horizons”, 5th Annual New England Sports and Orthopedic Rehabilitation Summit 2017; Advances in ACL Reconstruction, Rehabilitation, Injury Prevention, Warren Alpert Medical School, Providence, 1 April 2017 (Local).
57. “MR-based Approach to Assess the Integrity of Healing Ligaments & Grafts in vivo”, Vail Scientific Summit, Vail 23-26 August 2017 (National).
58. “Joint Injuries & Arthritis: A Translational Perspective”, Research Seminar, Rhode Island Hospital, 29 November 2017 (Local).
59. “Osteoarthritis After Joint Injury: Can We Improve Outcomes?”, Orthopaedic Grand Rounds, Brigham and Women’s hospital, Harvard Medical School, 13 December 2017 (National).
60. “MR-based Approach to Assess the Integrity of Healing Ligaments & Grafts In Vivo”, Translational Research Seminar, Brigham and Women’s hospital, Harvard Medical School, 13 December 2017 (National).
61. “MR-based Approach to Assess the Integrity of Healing Ligaments & Grafts In Vivo”, Michigan Center for Human Athletic Medicine and Performance (MCHAMP) Research Lecture, University of Michigan, 5 April 2018 (National).
62. “Time Zero”, AOSSM Medical Publishing Group Reviewers Workshop, American Orthopaedic Society for Sports Medicine Annual Meeting, San Diego, 6 July 2018 (National).
63. “Strategies for Minimizing Posttraumatic Osteoarthritis after ACL Injury”, Keynote Lecture, Translation in Regenerative Medicine, Regensburg, 1 December 2018 (International).
64. “Strategies for Minimizing Posttraumatic Osteoarthritis after Joint Injury”, Research Seminar. University of Nebraska Medical Center, Omaha, 25 January 2019 (National).
65. “Why do Females Tear Their ACLs more than Males?”, TRIA Orthopaedic and Sports Medicine Conference, Minneapolis, 1 February 2019 (National).
66. “Can We Prevent Osteoarthritis After an ACL Injury?”, Grand Rounds. Mayo Clinic, Rochester, 20 May 2019 (National).
67. “MR-based Approach to Assess the Integrity of Healing Ligaments & Grafts In Vivo”, Musculoskeletal Research Conference. Mayo Clinic, Rochester, 20 May 2019 (National).

68. “Bridge-Enhanced ACL Repair: From Concept to Clinical Trial”, ORS Musculoskeletal Biology Workshop. Sun Valley, 25-28 July 2019 (National).
69. “Research as a Platform for Junior Faculty Career Advancement”, Yale University, New Haven, 30 April 2021 (National).
70. “Funding Your Research”, Research Rounds, Orthopedic Clinical Effectiveness Research Center, Boston Children’s Hospital, Boston, 5 Nov 2021 (Regional).
71. “Progression of BEAR Technique: Concept to commercialization: the preclinical model is pivotal in the journey”, ORS Preclinical Models Workshop, Tampa 4 Feb 2022 (National).
72. “How to Write an Impactful Biosketch for a K-award Submission”, ORS Workshop, 8 February Tampa 2022 (National).
73. “Biomechanics of ACL Surgery”, Annual Brown Orthopedics Symposium “Pediatric and Adolescent Sports Medicine Update”, Providence, 30 April 2022 (Regional).
74. “Can Rocket Science Save Orthopedic Innovation”, Duke Grand Rounds, Durham, 22 June 2022 (National).
75. “Clinical Trial Updates and Quantitative MRI as a Predictor of ACL Surgery Outcomes”, 3<sup>rd</sup> Annual William E. Garrett, Jr, MD, PhD Research Day, Durham, 22 June 2022 (National).
76. “Panel Discussion: Insights into Careers in the Musculoskeletal Field”, Musculoskeletal Biology and Bioengineering (GRS), Gordon Research Seminar, Andover NH, 7 Aug 2022 (National).
77. "Predicting Anterior Cruciate Ligament (ACL) Failure Load with MRI as a Prospective Imaging Biomarker for Revision Surgery", New Approaches to Accelerate Discovery in the Musculoskeletal System, Musculoskeletal Biology and Bioengineering, Gordon Research Conference, Andover NH, 7-12 Aug 2022 (National).
78. “Quantitative MRI Biomarkers to Predict Risk of Reinjury Within 2 Years After ACL Surgery”, ACL Study Group, St. Kitts, 29 Jan – 2 Feb 2023 (International).
79. “The Utility of Quantitative MRI in ACL Surgery Postoperative Management”, Workshop, Orthopaedic Research Society, 13 February 2023 (National).
80. “Quantitative MRI to Assess the Strength of Healing Ligaments & Grafts In Vivo”, Biomedical Engineering Research Seminar, Brown University, 4 Apr 2024 (Local).
81. “Quantitative MRI to Assess the Strength of Healing Ligaments & Grafts In Vivo”, MGB Combined Orthopaedic Research Seminar Series, 8 May 2024 (Regional).
82. “Quantitative MRI to Assess the Strength of Healing Ligaments & Grafts In Vivo”, University of Wisconsin Department of Orthopedics and Rehabilitation Research Forum, 13 May 2024 (National).
83. “When is a Tissue Healed Enough to Return to Activity?”, University of Wisconsin Department of Orthopedics and Rehabilitation Research Forum, 13 May 2024 (National).
84. “The Bear”, Warren Alpert Medical School of Brown University, Grand Rounds, 16 Oct 2024 (Local).
85. “Strategies for Writing Effective Scientific Manuscripts”, Warren Alpert Medical School of Brown University, Orthopaedic Research Seminar, 23 Apr 2025 (Local).

GRANTS

1. Cervical Spine Research Society (Krag): Pin force measurement in a halo-vest orthosis. \$10,000 (direct); 12/96-11/97; Co-investigator.
2. Orthopaedic Research and Education Foundation (Institutional Grant; Fleming): Pin force measurement in a halo-vest orthosis. \$14,465 (direct); 12/96-11/97; Principal Investigator. National Institutes of Health (R03-AR45027; Fleming): An experimental model to evaluate ACL graft healing. \$150,000 (direct); 09/97-09/00; Principal Investigator.
3. AO/ASIF Foundation (Krag): Development of a Telemetered Implant to Measure Spine Loads In vivo. \$72,785 (direct); 10/97-09/98; Co-investigator.
4. Fletcher Allen Health Care Patient Oriented Research Grant (Fleming): A prospective, randomized study of anterior cruciate ligament reconstruction: A pilot study. \$15,000 (direct); 12/97-11/98; Principal Investigator.
5. Orthopaedic Research and Education Foundation (Institutional Grant; Fleming): Validation of a combined model of the tibiofemoral and patellofemoral joints. \$14,850 (direct); 06/98-05/99; Principal Investigator.
6. National Football League Charities Medical Research Grant (Fleming): In vivo measurement of anterior cruciate ligament strain during rehabilitation exercises. \$85,000 (direct); 02/99-03/01; Principal Investigator.
7. AO/ASIF Foundation (Krag): "Development of a telemetered implant to measure spine loads In vivo" (Competitive Renewal). \$50,000 (direct); 1/2000-12/2001; Co-investigator.
8. National Football League Charities Medical Research Grant (Fleming): In vivo measurement of anterior cruciate ligament strain during rehabilitation exercises in vivo (Competitive Renewal), \$79,100 (direct); 1/2001-12/2001; Principal Investigator.
9. GOTS-Beiersdorf Research Award (Fleming): In vivo measurement of Achilles tendon strain, \$15,000; 01/01-12/01; Principal Investigator.
10. Arthritis Foundation Biomedical Science Grant (Johnson): Prospective randomized investigation of rehabilitation following anterior cruciate ligament reconstruction. \$243,000; 07/98-09/02; Co-investigator.
11. Arthritis Foundation Biomedical Science Grant (Beynnon): An in vivo model for load induced articular cartilage degeneration. \$243,000; 01/01-12/03; Co-investigator.
12. National Football League Charities Medical Research Grant (Fleming): The effects of initial graft tension on articular cartilage following anterior cruciate ligament reconstruction. \$184,000 (direct); 09/03 – 08/05; Principal Investigator.
13. National Institutes of Health (R01-AR047910; Fleming): Effects of initial graft tension on ACL reconstruction: A prospective, randomized clinical study comparing two tensioning techniques. \$1,244,000 (direct); 09/03-08/09; Principal Investigator.
14. National Institutes of Health (R01-AR049199; Fleming): "Osteoarthritis following ACL reconstruction". \$1,245,000 (direct); 09/03-08/08; Principal Investigator.

15. Arthroscopy Association of North America Research Grant (Bradley): Effect of initial graft tension on tibiofemoral contact pressures. \$20,000; 07/04-06/05; Co-investigator/mentor.
16. National Institutes of Health (R01-AR047910S1; Fleming): Effects of initial graft tension on ACL reconstruction (Supplement). \$600,000 (direct); 12/05-08/08; Principal Investigator.
17. Brown University – Office of the Vice President for Research; Research Seed Grant (Brainerd) Development and verification of CTX imaging for musculoskeletal biomechanics research. \$82,269, 7/06 – 6/07; Co-investigator.
18. National Institutes of Health (2R01-AR053684; Spindler): Prognosis and Predictors of ACL Reconstruction: A Multicenter Cohort Study. 09/25/06-08/31/20; Co-Investigator.
19. Keck Foundation (Brainerd): Proposal to Design and Build a Dynamic 3D Skeletal Imaging System. \$1,800,000 (direct); 2/07 – 1/10; Co-investigator.
20. Orthopaedic Research & Education Foundation Resident - Clinician Scientist Training Grant (Plante): Tibiofemoral Contact Pressures: Comparison of Single-Bundle and Double-Bundle Reconstructive Techniques. \$20,000 (direct), 7/07 – 6/08; Mentor/Co-investigator.
21. National Institutes of Health COBRE Center of Excellence (P20-RR024484; Chen): Skeletal Health and Repair (Phase I). \$6,000,000 (direct); 10/07-09/12; Project Mentor/Core Co-Director.
22. Brown University/Women & Infants Hospital National Center of Excellence in Women's Health; Innovations in Women's Health Research Seed Grant (Chien): Biomechanical response of the cervix to compression. \$50,000; 01/08-12/09; Co-investigator (PI – E. Chien).
23. National Institutes of Health (R21-AR055937; Jay): Restitution of Lubrication in ACL Deficient Joints Preventing Wear. \$275,000 (direct); 04/08-03/10; Co-investigator.
24. National Institutes of Health (1R01-AR056834; Fleming/Murray) Biologically Enhanced Healing of Autograft ACL Reconstruction. \$1,480,000 (direct); 04/09-03/13; Co-Principal Investigator.
25. National Football League Charities Medical Research Grant (Bowers/Fleming): ACL Reconstruction using Biologically Enhanced Patellar Tendon Autograft, \$124,985 (direct); 01/2009-06/2011; Principal Investigator.
26. National Institutes of Health (2R01-AR047910; Fleming) Effects of Initial Graft Tension on ACL Reconstruction. \$1,250,000 (direct); 07/09-06/15; Principal Investigator.
27. National Institutes of Health (1R01-AR056834S1; Fleming/Murray) Biologically Enhanced Healing of Autograft ACL Reconstruction (Supplement). \$878,468 (direct); 08/01/03-07/31/11; Co-Principal Investigator.
28. National Institutes of Health (1R41-AR057276; Tribologics/Jay) Tribosupplementation of Injured Joints (Phase I). \$234,545 (Subcontract direct); 09/30/09-08/31/11; Subcontract Principal Investigator.
29. National Institutes of Health (2R01-AR054099; Murray) The Effect of Age on Functional ACL Healing. \$554,850 (Subcontract direct); 06/01/10-05/31/15; Co-Investigator (Subcontract Principal Investigator).

30. National Institutes of Health (R01-AR059185; Crisco) Thumb CMC Biomechanics and Early OA Progression. \$499,136 07/11/11-06/30/21; Co-investigator.
31. Department of Defense (Peer Reviewed Medical Research Program Investigator Initiated Research Award - PR110746; Fleming/Jay) Tribosupplementation with Lubricin in Prevention of Post-Traumatic Arthritis. \$2,219,221; 10/01/2012-09/30/2015; Co-Principal Investigator.
32. National Institutes of Health COBRE Center of Excellence (2P20-GM104937; Chen): Skeletal Health and Repair (Phase II). \$6,000,000 (direct), 09/12-08/17; Project Mentor/Core Co-Director.
33. National Institutes of Health (2R01-AR054099-S1; Murray) The Effect of Age on Functional ACL Healing. \$60,000 (Subcontract direct); 09/30/12-08/31/14, Co-Investigator (Subcontract Principal Investigator).
34. National Institutes of Health (2R42-AR057276; Tribologics/Jay) Tribosupplementation of Injured Joints (Phase II). \$378,164 (Subcontract direct); 10/1/13-09/30/16; Subcontract Principal Investigator.
35. National Institutes of Health COBRE Center of Excellence (5P30-GM122732; Chen): Skeletal Health and Repair (Phase III). \$3,721,248 (direct), 09/17-08/22; Core Director (Bioengineering).
36. National Institutes of Health (1R01-AR065462; Fleming/Murray) Non-invasive assessment of ligament healing. \$1,290,285 (direct); 10/01/14-09/31/19; Co-Principal Investigator.
37. National Institutes of Health (2R01-AR056834; Fleming/Murray) Bio-enhanced ACL repair as a modulator of post-traumatic osteoarthritis. \$1,931,027 (direct); 10/01/14-09/31/19; Co-Principal Investigator.
38. National Institutes of Health (1K99-AR069094; Beveridge) Effects of initial ACL graft tension on dynamic joint motion and osteoarthritis progression. \$168,500 (direct); 09/01/16-08/31/19; Mentor.
39. National Institutes of Health (1R01-AR065462-S1; Fleming/Murray) Non-invasive assessment of ligament healing (Supplement). \$250,000 (direct); 10/01/16-09/31/19; Co-Principal Investigator.
40. National Institutes of Health (1R34-AR066631; Murray/Spindler/Fleming) Planning a clinical trial of bio-enhanced ACL repair versus ACL reconstruction. \$500,000 (direct); 03/01/17-02/28/20; Multiple Principal Investigator.
41. Department of Defense (W81XWH-17-2-0016; Parrish/Murray) Lyophilized injectable for point of care therapeutic for post-traumatic osteoarthritis. \$737,500 (direct/RIH); 06/15/17-12/14/22; Site Principal Investigator.
42. National Institutes of Health (1R01-AR074131; Spindler) BEAR-MOON: A two-arm noninferiority blinded randomized clinical trial comparing ACL repair with BEAR device vs standard of care autograft. \$639,575 (direct/RIH); 07/01/18-06/30/2025; Co-Investigator.
43. Department of Defense (Peer Reviewed Medical Research Program Investigator Initiated Research Award - PR180633; Wei) Intra-articular injection of Alpha-2-Macroglobulin prevents post-traumatic osteoarthritis. 08/15/2019-08/14/2023; Co-Investigator.
44. National Institutes of Health (1R01-AR074973; Fleming) Knee arthrosis after ACL reconstruction: A long-term cohort study with matched controls. \$900,000 (direct); 05/01/19-10/30/24; Principal Investigator.



45. National Institutes of Health (1R01-AR083168; Beveridge) Neuromuscular response to competing ACL surgeries. \$968,411 (direct); 07/30/24-6/30/2028; Co-Investigator.
46. Department of Defense (Peer Reviewed Medical Research Program Investigator Initiated Research Award – PR241403; Fung) A novel treatment to mitigate complications of ACL reconstruction. Subcontract. 04/01/2025-03/31/2028.

#### UNIVERSITY TEACHING ROLES

1. Courses (Brown University)
  - Engineering 100; Projects in Engineering Design (undergraduate)
    - Fall 2005 (3 students)
    - Fall 2009 (1 student)
  - Engineering 195/196; Independent Studies in Engineering (undergraduate)
    - Fall 2003 (1 student)
    - Spring 2004 (1 student)
    - Fall 2006 (1 student)
    - Spring 2007 (1 student)
    - Fall 2007 (1 student)
    - Spring 2008 (1 student)
    - Spring 2013 (1 student)
    - Spring 2014 (1 students)
    - Fall 2017 (2 students)
    - Spring 2017 (1 student)
  - Biology 195/196; Directed Research/Independent Studies (undergraduate)
    - Fall 2005 (1 student)
    - Spring 2006 (1 student)
    - Fall 2009 (1 student)
    - Spring 2010 (1 student)
    - Fall 2011 (2 students)
    - Spring 2012 (2 students)
    - Spring 2013 (1 students)
    - Fall 2019 (1 student)
    - Spring 2020 (1 student)
    - Fall 2023 (1 student)
    - Spring 2024 (1 student)
  - Engineering 297/298; Special Projects, Reading, Research & Design (graduate)
    - Fall 2005 (2 students)
    - Spring 2006 (2 students)
    - Fall 2006 (2 students)
    - Spring 2007 (1 student)
    - Fall 2007 (3 students)
    - Spring 2008 (3 students)
    - Fall 2008 (2 students)
    - Spring 2009 (1 student)
    - Fall 2009 (1 student)
    - Spring 2010 (1 student)
    - Fall 2010 (2 students)

Spring 2011 (2 students)  
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 Fall 2019 (2 students)  
 Spring 2020 (2 students)  
 Fall 2020 (2 students)  
 Spring 2021 (2 students)  
 Fall 2022 (2 students)  
 Spring 2022 (2 students)  
 Fall 2023 (2 students)  
 Spring 2024 (3 students)  
 Fall 2024 (2 students)  
 Spring 2025 (2 students)

2. Independent Studies (Warren Alpert Medical School of Brown University)

2005 (2 students)  
 2007 (1 student)  
 2008 (1 student)  
 2010 (1 student)  
 2012 (1 student)  
 2013 (1 student)  
 2014 (2 students)  
 2015 (2 students)  
 2017 (1 student)  
 2025 (1 student)

3. Thesis Advisor

Barnes DA (2022 – 2026): Advancement and Validation of a Quantitative MRI Pipeline to Predict Risk of Subsequent Injury after ACL Surgery. Brown University, doctoral thesis, TBD.

Flannery SW (2017 – 2022): An End-to-End Pipeline for Quantitative MRI Analysis of Ligament/Graft Healing, Brown University, doctoral thesis, March 2022.

- Biercevicz AM (2010 – 2015): Magnetic Resonance Imaging Techniques to Determine the Structural Properties as an Outcome Measure of Anterior Cruciate Ligament Reconstruction or Primary Repair, Brown University, doctoral thesis, March 2015.
- Miranda DL (2007 – 2012): The Application of Biplanar Videoradiography to the Study of Kinematic & Kinetic Factors Associated with Non-Contact ACL Injury. Brown University, doctoral thesis, August 2012.
- Bowers ME (2005 – 2010): Partial Meniscectomy and Osteoarthritis: Evaluation with Quantitative MRI. Brown University, doctoral thesis, March 2010.
- Karamchedu NP (2022-2024): Factors associated with the occurrence of posttraumatic osteoarthritis 15 years after anterior cruciate ligament reconstruction. University of Connecticut Medical School, Capstone thesis, December 2023.
- Kadaba A (2023-2025): Quantifying mechanoreceptors in a porcine ACL: A comparative analysis of histological staining methods. Brown University, master's thesis, April 2025.
- Edgar, D: Defining the Laws' Texture Signature of Magnetic Resonance CISS and T2\* Sequenced Images of the Anterior Cruciate Ligament. Brown University, master's thesis, April 2021.
- Samuelson K (2016 – 2017): Limited Evidence Suggests a Protective Association Between Oral Contraceptive Pill Use and Noncontact Anterior Cruciate Ligament Injuries in Females: A Systematic Review. Brown University, master's Thesis, April 2017.
- Rohan AC (2015 – 2016) Assessing Ligament Degeneration using an Alternative Histological Assessment. Brown University, master's thesis, April 2016.
- Smith DA (2013 – 2014): Kinematic Accuracy of MRI Derived Bone Models used in XROMM 3D Motion Analysis, Brown University, master's thesis, April 2014.
- Yongpravat C (2007 – 2008): Tibiofemoral Contact Pressures: A Comparison of Single-Bundle and Double-Bundle Reconstructive Techniques. Brown University, master's thesis, May 2008.
- Le N-A (2005 – 2007): Assessment of Mechanical Properties and Fixed Charge Density in Goat Articular Cartilage using Indentation Methods and Biochemical Analysis. Brown University, master's thesis, February 2007.
- Brady MF (2006 – 2007): Effects of Initial Graft Tension on the Tibiofemoral Compressive Forces and Joint Position after Anterior Cruciate Ligament Reconstruction. Brown University, master's thesis, May 2009.
- Coats-Thomas M (2012 – 2014): An Analysis of ACL Injury: Mechanisms Behind the Observed Differences between Male and Female ACL-Intact and ACL-Reconstructed Subjects, Brown University, senior honors thesis (undergraduate), May 2014.
- Tarke M (2017 – 2018): Sensitivity of knee joint motion calculated from CT- and MRI- derived bone models, Brown University, senior honors thesis (undergraduate), May 2018.
- Lee J (2017 – 2018): Comparing histological predictors of ACL healing to MRI variables in repaired ligaments at early healing stages, Brown University, senior honors thesis (undergraduate), May 2018.

- Lo M (2017 – 2018): The Functional Role of Lubricin in Preventing Fibrosis of the Knee Joint, Brown University, senior honors thesis (undergraduate), May 2018.
- Breker A (2023 – 2024): Effect of initial graft tension on knee osteoarthritis outcomes after ACL reconstruction: A randomized controlled clinical trial with 15-year follow-up, Brown University, senior honors thesis (undergraduate), May 2024.

#### 4. Thesis Committees

- Uh BS: The Effect of Weight Bearing and Bracing on Anterior/Posterior Knee Laxity: The Introduction of the Vermont Knee Laxity Device and a Direct Comparison with the KT-1000 Arthrometer and Planar Stress Radiography. University of Vermont, master's thesis, June 1998.
- Brown DD: The Biomechanics of Functional Knee Bracing on Subjects with Anterior Cruciate Ligament Deficient Knees during Non-weight Bearing and Weight Bearing Conditions. master's thesis, University of Vermont, March 1999.
- Dabirrahmani D: An Experimental and Theoretical Investigation of Knee Kinematics: A Theoretical Application to Joint Reconstruction Techniques. University of South Wales, Sydney Australia, doctoral thesis, February 2007.
- Wald AJ: The Use of Inter-bone Distance Metrics to Classify in vivo Motion of the Scaphotrapezio-Trapezoidal (STT) Joint. Brown University, master's thesis, November 2007.
- Leventhal EL: Carpal Kinematics During Functional Tasks. Brown University, doctoral thesis, May 2009.
- Drewniak EI: Ex vivo Wear of Articular Cartilage. Brown University, doctoral thesis, May 2011.
- Rainbow MJ: Determining Carpal Joint Function through Kinematic Analysis and Predictive Modeling. Brown University, doctoral thesis, August 2011.
- Beveridge JE: Surface Interactions and Cartilage Damage in Two Ovine Models of Stifle Injury. University of Calgary, doctoral thesis, March 2011.
- Waller KA: The Chondroprotective Properties of Lubricin as a Boundary Lubricant and Tribological Supplement. Brown University, doctoral thesis, April 2013.
- Wilcox BJ: Biomechanical Basis of Mild Traumatic Brain Injury. Brown University, doctoral thesis, December 2013.
- Ludwig TE: Cartilage Boundary Lubrication and Rheology of Proteoglycan 4 + Hyaluronan Solutions and Synovial Fluid. University of Calgary, doctoral thesis, May 2014.
- Halilaj E: The Role of Articular Surface Morphology and Laxity in the Thumb Carpometacarpal (CMC) Joint Kinematics. Brown University, doctoral thesis, September 2014.
- Schlossberg B: Development of an Advanced Treatment for Augmentation of Vertebral Compression Fractures. University of South Wales, doctoral thesis, Sydney Australia, March 2016.
- Larson K: The Role of Lubricin in Mitigating Alterations to Joint Tissues Experiencing Friction. Brown University, doctoral thesis, April 2017.

- Anderson JA: Post-operative outcomes of transphyseal anterior cruciate ligament reconstruction in skeletally immature patients using round-headed cannulated interference screw fixation. University of South Wales, master's thesis, Sydney Australia, June 2017.
- Sutermaster BA: Increased and More Rapid in vitro and in vivo Lineage-specific Metabolite Production using a Gene Expression-based Sorting Strategy. Brown University, doctoral thesis, December 2018.
- Vakiel P: Direct measurement of the change in in-vivo stresses in ovine stifle joints following trauma using fiber optic sensors. University of Calgary, doctoral thesis, April 2019.
- Garcia-Lopez E: Evaluating Dorsal Subluxation on Radiography and Computed-Tomography in Patients with Early Thumb Carpometacarpal Osteoarthritis. Brown University, master's thesis, April 2020.
- Wilks BT: Cellular architects: Harnessing fibroblasts to synthesize highly-aligned, collagen-rich tissue construct. Brown University, doctoral thesis, April 2020.
- Akhbari B: The role of biomechanics in total wrist arthroplasty (TWA). Brown University, doctoral thesis, March 2021.
- Dambruoso T: A study of PRG4 as it relates to uric acid and gout. Brown University, master's thesis, December 2021.
- Lin A: Cartilage derived progenitor cells exhibit paracrine effects that direct the healing process. Brown University, master's thesis, April 2022.
- Kalshoven J: The biomechanics of the healthy, osteoarthritic, and replaced thumb carpometacarpal (CMC) Joint, Brown University, doctoral thesis, April 2024.
- Zalk S: Quantifying Biomechanical Properties of the Anterior Cruciate Ligament in a Rodent Model, Brown University, master's thesis, April 2024.
- Paschall L: Identifying mechanobiological deficits in allograft anterior cruciate ligament reconstructions, The Pennsylvania State University, doctoral thesis, June 2024.
- Vaughan, Q: Title TBD, Brown University, doctoral thesis, Date TBD.

#### 5. Postdoctoral Research Mentor

Roemhildt ML (2002-2003) University of Vermont

Waller KA (2013-2016) Brown University/Rhode Island Hospital

Beveridge JE (2015-2019) Brown University/Rhode Island Hospital

### HOSPITAL TEACHING ROLES

1. Director of Orthopaedic Residents Research Program (2003 – 2013)
2. Basic Science Lectures – Rhode Island Hospital (2003 – present)
  - Anterior cruciate ligament
  - Ligament & tendon
  - Articular cartilage
  - Biomechanics
3. Orthopaedic resident research project advisor

- 2004 Walsh, E Thumb portal study.  
Banerjee, R In vivo graft tension study, goats.
- 2005 Bradley, M ACL graft tension cadaver study.  
Langer, P Lateral ankle stability after talar process fracture.  
Tashjian, R Evaluation of tear size on fixation strength in rotator cuff repairs.  
Ritter, M ACL perturbation study.
- 2006 Tocci, S Rotator cuff injuries.  
Rey, J Volumetric determination of the meniscus through MRI imaging.  
Mechrefe, A Guinea pig OA & lubrication study.  
Langer, P In vitro evaluation of fragment excision on subtalar contact stress.
- 2007 Plante, M Double bundle versus single bundle ACL reconstruction.  
Monchik, K Optimizing the footprint of the rotator cuff repair.  
Teeple, E Lubrication of the rat knee with recombinant lubricin and HA.  
Fitzgibbons, P Joint kinematics following a meniscal root tear.  
Zonno, A. Biomechanical comparison of simulated arthroscopic single row rotator cuff repair with double row bridging repair.
- 2008 Kayiaros, S. Intraarticular and periprosthetic tribology in total hip arthroplasty.  
Villareal, R. Graft laceration and tensile strength of anterior cruciate ligament reconstruction.  
Tompkins, M. Contact Area and Pressure in Suture Bridge Rotator Cuff Repair Using Knotless Lateral Anchors.
- 2009 Teeple, E. The Effects of Supplemental Intra-Articular Lubricin and Hyaluronic Acid on the Progression of Post-Traumatic Arthritis in the Anterior Cruciate Ligament Deficient Rat Knee.  
Villareal, R. Graft laceration and tensile strength of anterior cruciate ligament reconstruction.
- 2010 Tompkins, M. The Use of a Non-Benzodiazepine Hypnotic Sleep-Aid (Zolpidem) in Patients Undergoing Arthroscopically Assisted ACL Reconstruction: Evaluation of the Effect on Post-Operative Narcotic Requirements, Pain, and Fatigue in a Randomized Controlled Clinical Trial.  
Teeple, E. Arthroscopic Debridement of Cartilage Lesions: Effects on Tissue Mechanics and Chondrocyte Viability.
- 2011 Sawyer, G. Tribosupplementation of Injured Joint: Lubricin Half-life Study.  
Teeple, E. Intervertebral Disc Properties In Lubricin Knockout Mice.
- 2012 Christino, M. Psychological factors associated with ACL reconstruction.  
Klinge, S. Early Laxity and Failure in Anatomic Single- vs. Double-Bundle ACL Reconstruction
- 2013 Avanian, J. Microvesicle Levels in the Synovial Fluid of the ACL Injured Knee

- 2016 Hodax, J. Effects of Metallic Debris on Inflammatory Cytokines in Synovial Fluid after ACL Reconstruction Surgery
- 2017 DeFroda, S. Repeatability of Signal Intensity and Volume Measurements of ACL Grafts with Magnetic Resonance Imaging
- 2018 DeFroda, S. Tibial Tunnel Widening Following Anterior Cruciate Ligament Reconstruction
- 2020 Thome, A. The Effect of Skeletal Maturity on Fixation Techniques for Tibial Eminence Fractures
- 2021 Lemme, N. The Effect of Posterior Tibial Slope on Anterior Cruciate Ligament Graft Forces and Knee Stability with and without Concomitant Lateral Extraarticular Tenodesis