
KHARMA C. FOUCHER, MD, PhD

University of Illinois at Chicago
Department of Kinesiology and Nutrition
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EDUCATION

- 2008 **MD** University of Illinois at Chicago
- 2006 **PhD** Department of Bioengineering, University of Illinois at Chicago
Dissertation: "Hip Joint Loading in Subjects with Total Hip Replacements"
Advisor: Debra E. Hurwitz, PhD, Rush University Medical Center Motion
Analysis Laboratory
- 1996 **SB** Engineering Sciences (Biomedical), Harvard University
Independent Honors Thesis: "A Breast Self-Examination Training System"
Advisor: Robert Howe, PhD, Harvard Biorobotics Laboratory

EXPERIENCE

FACULTY APPOINTMENTS

- 2013-Present **Assistant Professor**, Department of Kinesiology and Nutrition
Director, Biomechanics and Clinical Outcomes Laboratory
University of Illinois at Chicago
- 2011-Present **Adjunct Assistant Professor**, Department of Bioengineering
University of Illinois at Chicago
- 2009-2013 **Assistant Professor**, Department of Orthopedic Surgery
Rush University Medical Center, Chicago, Illinois
- 2005-2009 **Instructor**, Department of Orthopedic Surgery
Rush University Medical Center, Chicago, Illinois

OTHER POSITIONS

- 2010-2013 **Co-director**, Joan and Paul Rubschlager Motion Analysis Laboratory,
Department of Orthopedic Surgery, Rush University Medical Center

2005-2009 **Laboratory Manager**, Motion Analysis Laboratory, Department of Orthopedic Surgery, Rush University Medical Center

TEACHING and MENTORING

Courses Taught:

University of Illinois at Chicago, Department of Kinesiology and Nutrition

Spring 2019 KN 494/594: Mechanics of Human Locomotion

Fall 2017 *Upper level undergraduate/graduate course in gait mechanics*

Spring 2019 KN465 Biomechanics of the Neuromusculoskeletal Systems

Fall 2018 *Upper level course in tissue mechanics; Required for Movement Science concentration*

Spring 2018

Spring 2017

Fall 2016

Spring 2016

Fall 2015

Fall 2016 KN 501 Current Research in Kinesiology

Fall 2016 KN 596 Independent Research in Kinesiology

Summer 2016

Spring 2016

Spring 2015 University of Illinois at Chicago, Department of Kinesiology and Nutrition

KN594 Selected Topics in Kinesiology: Mechanics of Human Locomotion

Developed and taught graduate-level course in gait mechanics.

Spring 2014 KN 396 Independent Study in Kinesiology

Guest Lectures:

Spring 2017 KN 594 Grant Writing for PhD Students

KN 100 First-Year Seminar

Fall 2016 HN 594 Cells to Community

Fall 2015 HN 594 Cells to Community

Fall 2015 KN/PT574 Instrumentation for Motor Control Research

Rush University

Spring 2013 Program in Biomechanics

BMC 513 Kinematics of Human Motion

Developed and taught graduate-level course in lower extremity gait kinematics. Required course for MS in Biomechanics

AY 2011-2012 Rush Medical College

RMD781 – M1 research elective

AY 2012-2013 *Mentored individual student research projects and led a section of journal club.*

Other Mentoring:

2010-2013 Founder, Facilitator, Writing Accountability Groups
Rush University Research Mentoring Program
Established weekly peer-mentoring writing groups for junior faculty. Served as peer-facilitator for 6 10-weeks sessions over 3 years.

2009-2011 Member Mentoring Committee NIH NIAMS F32 AR057297 PI Hannah J. Lundberg, PhD, Title: Calculation of Total Joint Replacement Contact Forces During Level Walking.

Graduate student advising:

2016-Present Burcu Aydemir, MS. PhD Candidate, University of Illinois at Chicago
Department of Kinesiology and Nutrition

2016-Present Chun-Hao Huang, MS. PhD Candidate, University of Illinois at Chicago
Department of Kinesiology and Nutrition

2015-2017 Christopher C. Cinnamon, JD. MS candidate, University of Illinois at Chicago
Department of Kinesiology and Nutrition

2012-2017 Samir Chabra. MS candidate, University of Illinois at Chicago
Department of Bioengineering

2009-2011 Bryan R. Schlink, MS. University of Illinois at Chicago
Department of Bioengineering
Thesis: Gait Biomechanics and Disease Severity in Hip Osteoarthritis

Other Graduate Student Exam Committees:

2015-2018 Steven Mell, PhD Candidate
University of Illinois at Chicago, Department of Bioengineering
"Computational, Subject Specific Damage Modeling of the Polyethylene Component of Total Knee Replacements"

2015-2016 Kristin Hoddy, PhD
University of Illinois at Chicago, Department of Kinesiology and Nutrition
"Meal timing during alternate day fasting: Effect on heart disease risk and hunger in obese humans"

9/2014 Christopher Knowlton, BS, PhD Candidate,

University of Illinois at Chicago, Department of Bioengineering
“A Model of Wear from Retrieved Polyethylene Components of Total Knee Replacements”

5/2014 Andrew Arnold, MS,
University of Illinois at Chicago, Department of Kinesiology and Nutrition
“Influence of walking speed and slope on the relationship between trunk kinematics and step width”

2/2014 Christopher Ferrigno, MPT; PhD, Rush University, Department of Anatomy and Cell Biology; “Evaluating the Association between Changes in Foot Kinematics, Center of Foot Pressure, and Knee Joint Loading”

3/2014 Mackenzie Pater, PhD
University of Illinois at Chicago, Department of Kinesiology and Nutrition;
“Associating Knee Osteoarthritis with Fall Risk: Implications for Interventions”

Medical Student Research Mentoring:

Summer 2012 Omar Behery, Rush Medical College (Deans Fellowship Recipient)
2011-2012 Genna Waldman, Rush Medical College
Summer 2011 Andreea Mihai, Rush Medical College (Dean’s Fellowship Recipient)
Melanie Marsh, Rush Medical College (co-mentor with Laura Thorp, PT, PhD)
Summer 2009 Matthew R. Walker, University of Illinois at Chicago, College of Medicine
Summer 2008 George Kannakeril, Rush Medical College

Undergraduate Student Research Mentoring:

2017-present Megan Horras, University of Illinois at Chicago, Kinesiology
2014-2017 Vivian Chau, University of Illinois at Chicago, Kinesiology
2014-2017 Kristin Tayag, University of Illinois at Chicago, Kinesiology
2014-2016 Colleen Ryan, University of Illinois at Chicago, Kinesiology
2014-2015 Sebastian Chlosta, University of Illinois at Chicago, Bioengineering
2014-2016 Kris Dapitan, University of Illinois at Chicago, Kinesiology
Advisor, Honors College Capstone Project

OTHER PROFESSIONAL ACTIVITIES and SERVICE

Institutional Service

University of Illinois at Chicago:

2018-present	Task force on the BS in Kinesiology, Department of Kinesiology and Nutrition
Spring 2018	Clinical Instructor Search Committee, Department of Kinesiology and Nutrition
7/19/16, 7/20/17	Applied Health Sciences: Summer Exploration and Transition Program, Faculty Round Table for incoming freshman pre-health students
Spring 2015	Chair, Faculty Search Committee, Department of Kinesiology and Nutrition, Instructor
2014-2015	Chair, Department of Kinesiology and Nutrition, Doctoral Student Evaluation Committee
Spring 2015	Department of Kinesiology and Nutrition, Faculty Search Committee, Assistant/Associate Professor, Biomechanics/Mobility
3/19/15	Lab Tour & Interview for students from Biological Sciences 100
7/15/14	Applied Health Sciences: Summer Exploration and Transition Program, Lab Tour for incoming freshman pre-health students
7/1/14-6/20/16	College of Applied Health Sciences Representative, University of Illinois at Chicago Senate
2013- 2014	Department of Kinesiology and Nutrition, Doctoral Student Evaluation Committee
Spring 2014	Department of Kinesiology and Nutrition, Faculty Search Committee, Clinical Assistant/Associate Professor, Anatomy and Physiology

Rush University Medical Center:

2012-2013	Provost Committee on Gender Issues
2012-2013	Committee on Admissions, Holistic Screening Subcommittee
2012-2013	Committee on Admissions, Interviewer Subcommittee
2012	Rush Research Mentoring Program Annual Retreat Planning Committee
2012	Faculty Search Committee, External Member, University of Illinois at Chicago, Department of Kinesiology and Nutrition
2011-2012	Interviewer, Rush Medical College, Office of Admissions
12/2011	Rush University, College of Health Sciences Research Retreat. Hosted roundtable on writing productivity

2011 Rush Research Mentoring Program Annual Retreat Planning Committee
2011 T32 Short-term Trainee Selection Committee, Rush Medical College, Department of Anatomy and Cell Biology
05/2010 Panelist, "Going Weak in the Knees – when Arthritis Strikes"
Rush University Medical Center, Department of Orthopedic Surgery Educational Event- Rush Rounds

Memberships

2008-Present Orthopedic Research Society
2018-2020 – Awards and Recognition Committee
2018 – Moderator, Arthroplasty Clinical Outcomes Session
2014-2017 – Abstract Reviewer
2014 Poster Tour Leader – "Hip Mechanics and FAI" 60th Annual Meeting, New Orleans, LA

Grant review

7/2017-6/2023 NIH Grant Review
Member Musculoskeletal Rehabilitation Sciences Study Section [MRS]
6/2017 NIH Grant Review
ad hoc Member Musculoskeletal Rehabilitation Sciences Study Section [MRS]
3/2017 NIH Grant Review; National Institute of Arthritis and Musculoskeletal and Skin Diseases, Special Emphasis Panel
3/2017 University of Illinois at Chicago Limited Competition Internal Peer Review
Aetna Foundation
1/2017 University of Illinois at Chicago Limited Competition Internal Peer Review
HRSA Primary Care Medicine and Dentistry Clinician Educator Award
12/2016 Orthopaedic Research and Education Foundation
Goldberg Arthritis Research Grant Peer Review Committee
10/2016 NIH Grant Review
ad hoc Member Musculoskeletal Rehabilitation Sciences Study Section [MRS]
02/2015 NIH Grant Review
ad hoc Member Skeletal Biology Structure & Regeneration Study Section [SBSR]

Ad Hoc Peer-review

Arthritis & Rheumatology	Journal of Biomechanics
Archives of Physical Medicine and Rehabilitation	Journal of Orthopaedic Research
Computers in Biology and Medicine	Medicine and Science in Sports & Exercise
Clinical Biomechanics	Osteoarthritis and Cartilage
Clinical Orthopaedics and Related Research	Physical Therapy
Gait & Posture	

Outreach

4/11/2018 National Biomechanics Day
Hosted a class of 25 students in grades 4-6 from Suder Montessori School, a Chicago Public School.

RESEARCH

HONORS, AWARDS, AND OTHER RECOGNITION

- 2017 "Excellence in Clinical Science" Award from Journal of Orthopaedic Research, for article "Identifying clinically meaningful benchmarks for gait improvement after total hip arthroplasty"
Selected from articles with ≥ 1000 downloads in 2016
- 2015 Article "Does hip implant positioning affect the peak external adduction moments of the healthy knees of subjects with total hip replacements?" featured in Special [Virtual Issue](#) of the Journal of Orthopaedic Research: *Total Joint Arthroplasty*. Compiling "the best recently published manuscripts in the fields of biomechanics, biomaterials, biology and clinical science relevant to joint replacement." http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291554-527X/homepage/jor_virtual_issues.htm
- 2014 Best in Class Poster Award. Association of American Medical Colleges, Group on Faculty Affairs Annual Meeting
"Supporting faculty scholarship: factors associated with writing productivity"
Authors: **Foucher KC**, Skarupski KA
- 2011 Mentee of the Year, Rush Research Mentoring Program
For contributions to the mentoring program and research accomplishments in AY 2010

- 2011 Award Recipient, Rush Research Forum, Rush Research Mentoring Program Abstract competition.
"Gait adaptations and reconstructed joint geometry are associated with abnormal contralateral hip and knee loading after total hip replacement"
- 2011 Finalist, New Investigator Recognition Award, Orthopaedic Research Society
Among 40 finalists selected from all submissions from researchers within 5 years of terminal degree
"Gait adaptations and reconstructed joint geometry are associated with abnormal contralateral hip and knee loading after total hip replacement"
- 2010 Finalist, Rush Research Mentoring Program Abstract competition, Rush Research Forum
"Full Activity Recovery but Incomplete Biomechanical Recovery after Minimally Invasive Total Hip Arthroplasty"
- 1999 Musculoskeletal Research Center of the University of Pittsburgh Medical Center Award, Annual Meeting of the American Society of Biomechanics
"Gait adaptations in postoperative total hip replacement patients are associated with reduced hip contact force"
- 1999 Best Oral Presentation, University of Illinois at Chicago MD/PhD Student Research Symposium
"Factors influencing variation in gait adaptations after total hip replacement"

Awards Received by Trainees

- 2017 Chun-Hao Huang, 1st Place, University of Illinois at Chicago Student Research Forum
"Step Length Asymmetry and its Associations with Mechanical Energy Exchange, Function, and Fatigue after Total Hip Replacement"
- 2016 J. Heather Brunner, Rheumatology Research Foundation Student Achievement Award
"Sex-Specific Associations Between Improvement in Gait Mechanics and Improvement in Pain, Function, and Abductor Strength after Total Hip Arthroplasty"
- 2012 Samir Chabra, American College of Rheumatology Research and Education Foundation/Abbott Medical/Graduate Student Achievement Award
"Gait Differences Are Present in Subjects with Symptomatic Vs. Asymptomatic Mild Radiographic Hip Osteoarthritis"

- 2011 Bryan Schlink, 3rd place, University of Illinois at Chicago Student Research Forum
- “Hip motion patterns are associated with disease severity and reduced dynamic loading in hip osteoarthritis”*
- Co-Authors: Shakoor N, Wimmer MA, Foucher KC

Other Co-Authored Awards

- 2013 Best in Class Poster Award. Association of American Medical Colleges, Group on Faculty Affairs Annual Meeting
- “Strategies for Enhancing Writing Accountability Groups within a Junior Faculty Research Mentoring Program”*
- Co-Authors: Lundberg HJ, **Foucher KC**, Skarupski KA.

MEDIA

- 2017 <http://www.healio.com/rheumatology/osteoporosis-and-bone-disorders/news/online/%7B3454df33-f839-4bc1-b659-c982f7a6b716%7D/sex-specific-associations-found-for-improvement-during-rehabilitation-for-total-hip-arthroplasty>
- 2016 http://www.painweek.org/news_posts/men-and-women-may-benefit-from-tailored-rehabilitation-approaches.html
- 2016 American College of Rheumatology/Association of Rheumatology Health Professionals Press Conference. *One of 24 invited participants selected by the society to discuss research with the press.*
- 2012 Interviewed for [WGN News](#) Health Segment, December 19, 2012
- 2012 Featured on WBEZ science segment *“[Clever Apes](#)”*, May 12, 2012

INVITED PRESENTATIONS

- 11/29/2018 University of Melbourne, Victoria, Australia
- 11/8/2018 University of Florida
- 11/2/2018 University of Nebraska Omaha
- 8/21/2017 Shirley Ryan Ability Lab, Chicago IL
- 6/16/2016 US Bone and Joint Initiative Board of Directors Meeting. Chicago, IL.
- 6/13/2016 Chicago Tai Chi – Interview and conversation on the role of exercise in OA development and progression.
- 9/24/2013 Johns Hopkins School of Medicine Office of Faculty Development Seminar, Baltimore, Maryland.
- 5/9/2012 Invited Faculty, American Association of Orthopaedic Surgeons/Orthopaedic Research Society Femoroacetabular Impingement Research Symposium, Chicago, Illinois.

RESEARCH FUNDING

Pending

7/1/19-6/30/24 Principal Investigator
NIH/NIAMS R01 AR074910
Title: Identifying and addressing biomechanical barriers to physical activity after total hip replacement
\$2,054,103 direct costs

Current

11/16/18 – 11/15/20 Principal Investigator
University of Illinois at Chicago Center for Clinical and Translational Sciences
Pilot Grant
Title: Impact of obesity, fatigue, and strength on physical activity in people with knee OA
\$60,000 direct costs

6/01/18 – 5/31/19 Principal Investigator
AHS Interdisciplinary Pilot Grant
Title: Predicting mechanical and clinical outcomes of total hip arthroplasty
\$19,329

5/1/16 – 4/30/19 Principal Investigator
NIH/NIA R21 AG052111
Title: Impact of osteoarthritis-related gait impairment on energy, fatigue, and physical activity
\$275,000 direct costs

Completed

3/1/15 – 6/30/16 Principal Investigator
University of Illinois at Chicago Campus Research Board
Title: Understanding and improving gait mechanics and functional outcomes after total hip replacement
\$19,898

7/1/12 – 6/30/13 Principal Investigator
Private Donation
Title: "Establishing a model of early stage hip OA – femoroacetabular impingement"
\$140,000

12/1/12 – 6/30/13 Principal Investigator
Rush Research Mentoring Program Young Investigator Fund Grant

- Title: "Neuromechanical predictors of clinical and functional outcomes after total hip replacement"
\$22,250
- 7/1/11 – 6/30/13 Principal Investigator
Rush Translational Science Consortium/Searle Foundation
Pilot Projects Grant
Title: "Development and validation of a novel biomechanical marker of hip osteoarthritis"
\$100,000
- 8/1/11 – 4/30/15 Co-Investigator (PI Markus Wimmer)
NIH/NIAMS R01AR059843
Title: "Wear Testing for Enhanced Prediction of TKR Clinical Performance";
\$900,000 (Direct Costs)
- 7/1/10 – 6/30/16 Recipient, NIH Loan Repayment Program (NIAMS)
Extramural Loan Repayment Program for Clinical Research (LRP-CR)
\$141,297
- 7/1/10 – 7/1/12 Co-Investigator (PI Najia Shakoor, MD)
Arthritis Foundation Innovative Research Grant
Title: "The Effects of Specialized Footwear in Osteoarthritis of the Knee"
\$200,000
- 7/1/06 – 6/30/10 Co-Investigator (PI Markus Wimmer)
NIH/NIAMS R03AR052039
Title: "Daily Activity of TKR Patients as Input for Wear Testing"
\$150,000 (Direct Costs)

PUBLICATIONS

Articles in peer-reviewed journals:

1. Courtney CA, Atré P, **Foucher KC**, Alsouhibani AM. Hypoesthesia after anterior cruciate ligament reconstruction: The relationship between proprioception and vibration perception deficits in individuals greater than one year post-surgery. *The Knee, in press*, 2018.
2. **Foucher KC**, Chmell SJ, Courtney CA. Duration of Symptoms is Associated with Conditioned Pain Modulation and Somatosensory Measures in Male and Female Patients with Knee Osteoarthritis. *Journal of Orthopaedic Research, in press*, 2018.

3. Brunner JH, **Foucher KC**. Associations between biomechanics and clinical outcomes before and after total hip arthroplasty differ in men and women. *Clinical Biomechanics*, 59: 167-173, 2018.
4. Skarupski KA, **Foucher KC**. Writing Accountability Groups (WAGs): A tool to help junior faculty members build sustainable writing habits. *Journal of Faculty Development*, 32: 1-8, 2018.
5. Longworth JA, **Foucher KC**. Abnormal intersegment coordination during level walking at self-selected speeds before and after total hip arthroplasty. *Journal of Biomechanics*, 72:180-186, 2018.
6. Farkas G, Schlink B, Fogg L, **Foucher KC**, Wimmer M, Shakoor N. Gait asymmetries in symptomatic unilateral osteoarthritis of the hip and their association with radiographic severity and pain. *Hip International*, in press, 2018.
7. **Foucher KC**, Cinnamon CC, Ryan CA, Chmell SJ, Dapiton K. Hip abductor strength and fatigue are associated with activity levels more than 1 year after total hip replacement. *Journal of Orthopaedic Research*. 36: 1519-1525, 2018.
8. **Foucher KC**. Sex-specific hip osteoarthritis-associated gait abnormalities: Alterations in dynamic hip abductor function differ in men and women. *Clinical Biomechanics*. 48: 24-29, 2017.
9. **Foucher KC**. Preoperative gait mechanics predict clinical response to total hip arthroplasty. *Journal of Orthopaedic Research*. 35(2): 366-76, 2017.
10. Stoykov ME, Skarupski KA, **Foucher KC**, Chubinskaya S. Junior Investigators Thinking about Quitting Research: A Survey, *American Journal of Occupational Therapy*, 71(2), 2017.
11. Riff AJ, Gross CE, **Foucher KC**, Kuo KN, Gitelis S. Acetabular Osteoarticular Allograft after Ewing Sarcoma Resection: A 15-Year Follow-up. *Journal of Bone and Joint Surgery Case Connector*, 6(4), e89, 2016
12. **Foucher KC**. Gait abnormalities before and after total hip arthroplasty differ in men and women. *Journal of Biomechanics*, 49(14): 3582-86, 2016
13. Lundberg HJ, Rojas IL, **Foucher KC**, Wimmer MA. Comparison of Antagonist Muscle Activity during Walking between Total Knee Replacement and Control Subjects using Unnormalized Electromyography. *The Journal of Arthroplasty*, 31(6): 1331-9, 2016.
14. **Foucher KC**. Identifying Clinically Meaningful Benchmarks for Gait Improvement after Total Hip Arthroplasty. *Journal of Orthopaedic Research*, 34(1):88-96, 2016.
15. **Foucher KC**, Freels S. Preoperative Factors Associated with Postoperative Gait Kinematics and Kinetics after Total Hip Arthroplasty. *Osteoarthritis and Cartilage*. 22(10); 1685-94, 2015.
16. Shakoor N, **Foucher KC**, Wimmer MA, Mikolaitis-Preuss RA, Fogg LF, Block JA. Asymmetries and relationships between dynamic loading, muscle strength, and proprioceptive acuity at the knees in symptomatic unilateral hip OA. *Arthritis Research and Therapy*. 16(6): 455, 2014.
17. Behery OA, **Foucher KC**. Are Harris Hip Scores and Gait Mechanics Related Before and After THA? *Clinical Orthopaedics and Related Research*. 472(11): 3452-61, 2014.

18. **Foucher KC**, Wimmer MA. Does hip implant positioning affect the peak external adduction moments of the healthy knees of subjects with total hip replacements? *Journal of Orthopaedic Research*; 31(8): 1187-94, 2013.
19. Matheney T, Sandell L, **Foucher K**, Lamontagne M, Grodzinsky AJ, Peters CL. Motion analysis, cartilage mechanics, and biology in femoroacetabular impingement: Current understanding and areas of future research. *Journal of the American Academy of Orthopaedic Surgeons*; 21 (Suppl. 1): S27-S32, 2013.
20. Shakoor N, Lidtke, RH, Wimmer, MA, Mikolaitis RA, **Foucher KC**, Thorp LE, Fogg LF, Block JA. Improvement in knee loading after use of specialized footwear for knee osteoarthritis: Results of a six-month pilot investigation. *Arthritis and Rheumatism*; 65(5): 1282-89, 2013.
21. **Foucher KC**, Schlink BR, Shakoor N, Wimmer MA. Sagittal plane hip motion reversals during walking are associated with disease severity and poorer function in subjects with hip osteoarthritis. *Journal of Biomechanics*; 45(8):1360-5, 2012.
22. Lundberg HJ, **Foucher KC**, Andriacchi TP, Wimmer MA. Direct comparison of measured and calculated total knee replacement force envelopes during walking in the presence of normal and abnormal gait patterns. *Journal of Biomechanics*; 45(6): 990-6, 2012.
23. Wimmer MA, Hildebrand M, Moio KC, **Foucher KC**, Della Valle CJ, Berger RA, Galante JO. Recovery after minimally invasive total hip arthroplasty: A gait study. *Minerva Orthopeda e Traumatologica*; 63(2): 101-10, 2012.
24. Shakoor N, Lee KJ, Fogg LF, Wimmer MA, **Foucher KC**, Mikolaitis RA, Block JA. The relationship of vibratory perception with dynamic joint loading, radiographic severity, and pain in knee osteoarthritis. *Arthritis and Rheumatism*; 64:181-6, 2012.
25. **Foucher KC**, Wimmer MA. Contralateral hip and knee gait biomechanics are unchanged by total hip replacement for unilateral hip osteoarthritis. *Gait & Posture*; 35:61-5, 2012.
26. Shakoor N, Dua A, Thorp L, Wimmer MA, **Foucher KC**, Fogg LF, Block JA. Asymmetric loading and bone mineral density at the asymptomatic knees of subjects with unilateral hip OA, *Arthritis and Rheumatism*; 63:3853-8, 2011.
27. **Foucher KC**, Wimmer MA, Moio, KC, Hildebrand M, Berli MC, Walker MR, Berger RA, Galante JO. Time course and extent of functional recovery during the first postoperative year after minimally invasive total hip arthroplasty with two different surgical approaches. *Journal of Biomechanics*; 44:372-8, 2011.
28. **Foucher KC**, Thorp LE, Hildebrand M, Orozco D, Wimmer MA. Differences in preferred walking speeds in a gait lab compared to the "real world" after total hip replacement. *Archives of Physical Medicine and Rehabilitation*; 91:1390-5, 2010.
29. Thorp LE, Wimmer MA, **Foucher KC**, Sumner DR, Shakoor N, Block JA. The biomechanical effects of focused muscle training on medial knee loads in OA of the knee: a pilot, proof of concept study. *Journal of Musculoskeletal and Neuronal Interactions*; 10:166-73, 2010.

30. Shakoor N, Sengupta M, **Foucher KC**, Wimmer MA, Fogg LF, Block JA. The Effects of Common Footwear on Joint Loading in Osteoarthritis of the Knee. *Arthritis Care and Research*; 62:917-23, 2010.
31. **Foucher KC**, Hurwitz DE, Wimmer MA. The relative importance of gait vs. joint positioning on hip contact forces after total hip replacement. *Journal of Orthopaedic Research*; 27:1576-82, 2009.
32. Lundberg HJ, **Foucher KC**, Wimmer MA. A parametric approach to numerical modeling of TKR contact forces. *Journal of Biomechanics*; 42:541-5, 2009.
33. Rojas IL, Provencher MT, Bhatia S, **Foucher KC**, Bach B, Romeo A, Wimmer MA, Verma N. Biceps Activity during Windmill Softball Pitching: Injury Implications and Comparison to Overhand Throwing. *American Journal of Sports Medicine*; 37:558-65, 2009.
34. **Foucher KC**, Hurwitz DE, Wimmer MA. Do gait adaptations during stair climbing result in changes in implant forces in subjects with total hip replacements compared to normal subjects? *Clinical Biomechanics*; 23: 754-61, 2008.
35. **Foucher KC**, Hurwitz DE, Wimmer MA. Preoperative gait adaptations persist one year after surgery in clinically well-functioning total hip replacement patients. *Journal of Biomechanics*; 40: 3432-37, 2007.
36. Hurwitz DE, **Foucher KC**, Andriacchi TP. A new parametric approach for modeling hip forces during gait. *Journal of Biomechanics*; 36:113-9, 2003.
37. Hurwitz DE, **Foucher KC**, Sumner DR, Andriacchi TP, Rosenberg AG, Galante JO. The influence of walking mechanics on bone mineral density in the proximal femur in patients with hip osteoarthritis. *Journal of Biomechanics*; 31:919-25, 1998.

Book chapters:

1. **Foucher KC**. "Gait Pathomechanics in Hip Disease" in Diagnosis and Management of Hip Disease: Biological Basis of Clinical Care. Aaron RK. Ed. 2015, Springer International Publishing. pp 71-97.
2. **Foucher KC**, Wimmer MA, Andersson GBS, "Biomechanics of Arthroplasty" in Basic Biomechanics of the Musculoskeletal System 4th edition, Nordin & Frankel eds. 2011, Lippincott Williams & Wilkins. pp 404-425.

Peer-reviewed abstracts presented at national and international meetings:

1. **Foucher KC**, Pater ML, Grabiner MD. The influence of knee osteoarthritis on the efficacy of trip-specific fall prevention perturbation training. 65th Annual Meeting, Orthopaedic Research Society, 2019, *Poster Presentation – Foucher*
2. **Foucher KC**, Chmell SJ, Courtney CA. Knee Osteoarthritis Symptom Duration Is Associated with Conditioned Pain Modulation and Vibration Perception Threshold Impairment. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2018, *Poster Presentation – Foucher*

3. Huang CH, **Foucher KC**. Step Length Asymmetry and its Associations with Mechanical Energy Exchange, Function, and Fatigue after Total Hip Replacement. 64th Annual Meeting, Orthopaedic Research Society, 2018. *Poster Presentation - Huang*
4. Aydemir B, **Foucher KC**. Trunk Asymmetry during Walking is Associated with Lower Hip Abductor Strength and Activity Levels after Total Hip Replacement. 64th Annual Meeting, Orthopaedic Research Society, 2018. *Poster Presentation - Aydemir*
5. **Foucher KC**. Examining Validity Of Patient-reported Outcomes Measurement Information System (PROMIS) Instruments In Community-dwellers With Total Hip Replacements. 64th Annual Meeting, Orthopaedic Research Society, 2018. *Poster Presentation - Foucher*
6. **Foucher KC**, Chmell SJ, Courtney CA. Sex Differences in Descending Pain Inhibition in People with Symptomatic Knee Osteoarthritis. 63rd Annual Meeting, Orthopaedic Research Society, 2017. *Poster Presentation – Foucher*
7. Cinnamon CC, Longworth JA, Brunner JH, Vhau VK, Ryan KR, Chmell SJ, **Foucher KC**. Hip Abductor Strength is Associated with both Performance Test-based and Self-reported Function after Total Hip Replacement. 63rd Annual Meeting, Orthopaedic Research Society, 2017. *Poster Presentation – Cinnamon*
8. Longworth JA, Chlostra S, Dapiton KR, Tayag KA, **Foucher KC**. Inter-joint Coordination of Kinematics and Kinetics Before and After Total Hip Arthroplasty. 63rd Annual Meeting, Orthopaedic Research Society, 2017. *Oral Presentation – Longworth*
9. Brunner JH, **Foucher KC**. Sex-Specific Associations Between Improvement in Gait Mechanics and Improvement in Pain, Function, and Abductor Strength after Total Hip Arthroplasty. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2016, *Oral Presentation – Brunner*.
10. **Foucher KC**. Gait Abnormalities Due to Hip Osteoarthritis Are Different in Men and Women. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2016, *Poster Presentation – Foucher*
11. **Foucher KC**. Sex-specific patterns of gait and functional recovery from total hip arthroplasty. 62nd annual meeting, Orthopaedic Research Society, 2016. *Poster Presentation*
12. **Foucher KC**. Clinically Anchored Benchmarks for Gait Improvement after Total Hip Arthroplasty. 61st annual meeting, Orthopaedic Research Society, 2015. *Oral Presentation*
13. Farkas GJ, Shakoor N, Lee S, Kawecki RC, **Foucher KC**, Espinoza Orias AA, Nho SJ. Somatosensory Deficits in Patients with Symptomatic Femoroacetabular Impingement. International Society for Hip Arthroscopy Annual Meeting, 2014. *e-Poster*.
14. **Foucher KC**, Skarupski KA. Greater research confidence is associated with scholarly output. Association of American Medical Colleges Group on Faculty Affairs Annual Meeting, Boston MA, 2014. *Oral Presentation*.
15. **Foucher KC**, Skarupski KA. Supporting faculty scholarship: factors associated with writing productivity. Association of American Medical Colleges Group on Faculty Affairs Annual Meeting, Boston MA, 2014. *Poster Presentation*.
16. **Foucher KC**. Preoperative Gait Variables and Harris Hip Scores Predict Clinical Recovery After Total Hip Replacement. 60th annual meeting, Orthopaedic Research Society, 2014. *Poster Presentation*

17. **Foucher KC**. Relationships between Preoperative Harris Hip Scores and Gait Improvement after Total Hip Replacement Differ in Men and Women. 60th annual meeting, Orthopaedic Research Society, 2014. *Poster Presentation*
18. **Foucher KC**, Behery OA. Relationships between clinical outcome measures and gait variables before and after total hip arthroplasty. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2013. *Oral Presentation*
19. Skarupski, KA, Stoykov ME, **Foucher KC**, Chubinskaya S. Are physician-scientists becoming an 'endangered species'? Association of American Medical Colleges, Group on Faculty Affairs Professional Development Conference, 2013. *Oral Presentation – Skarupski*
20. Lundberg HJ, **Foucher KC**, Skarupski KA. Strategies for Enhancing Writing Accountability Groups within a Junior Faculty Research Mentoring Program, Association of American Medical Colleges, Group on Faculty Affairs Annual Meeting, Minneapolis, MN, 2013. (*Winner Best in class poster award*)
21. Behery OA, **Foucher KC**. Age, gender, and body mass index do not explain individual variability in clinical and gait recovery after total hip arthroplasty. Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2013. *Oral Presentation – Foucher*
22. Chabra SS, **Foucher KC**. Hip disability and osteoarthritis outcome scores are directly related to gait variables in subjects with hip pain. Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2013.
23. **Foucher KC**, Waldman G. Total hip replacement nonresponders with high baseline clinical scores have similar gait impairment as those with low baseline clinical scores. Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2013. *Poster Presentation*
24. Waldman G, **Foucher KC**. Clinical and Biomechanical Characteristics of Total Hip Arthroplasty Responders and Nonresponders. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2012. *Oral Presentation*
25. Chabra SS, Shakoor N, **Foucher KC**. Gait Differences Are Present in Subjects with Symptomatic Vs. Asymptomatic Mild Radiographic Hip Osteoarthritis. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2012. (*Winner ACR/REF/Abbot Medical/Graduate Student Achievement Award*) *Poster Presentation – Chabra*
26. Shakoor N, Lidtke RH, Fogg LF, Mikolaitis RA, Wimmer MA, **Foucher KC**, Thorp LE, Block JA. Flexible Footwear Reduces Dynamic Joint Loads in Knee Osteoarthritis: Results of a 6 Month Randomized Controlled Trial. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2012. *Poster Presentation*
27. **Foucher KC**, Skarupski KA. Writing more through peer-mentoring: developing and implementing a writing accountability group within a faculty mentoring program. Association of American Medical Colleges, Group on Faculty Affairs Professional Development Conference, 2012. *Poster Presentation*

28. **Foucher KC**, Wimmer MA. Lower preoperative hip adduction moments are associated with greater clinical and biomechanical recovery after total hip replacement. 58th Annual Meeting Orthopaedic Research Society, 2012. *Poster Presentation*
29. Mihai A, Wimmer MA, **Foucher KC**. The influence of gait abnormalities on minimum foot clearance during level walking before and after total hip replacement. 58th Annual Meeting Orthopaedic Research Society, 2012. *Poster Presentation*
30. Lundberg HJ, **Foucher KC**, Andriacchi TP, Wimmer MA. TKR Contact Forces for Normal and Abnormal Gait Patterns. 58th Annual Meeting Orthopaedic Research Society, 2012.
31. **Foucher KC**, Schlink BR, Shakoor N, Wimmer MA. Gait Biomechanics as Predictors of Hip Osteoarthritis Progression. American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, 2011. *Poster Presentation*
32. Schlink BR, Wimmer MA, **Foucher KC**. Hip motion patterns are associated with disease severity and reduced dynamic loading in hip osteoarthritis. 57th Annual Meeting Orthopaedic Research Society, 2011. *Oral Presentation*
33. **Foucher KC**, Galante JO, Berli MC, Berger RA, Wimmer MA. Gait adaptations and reconstructed joint geometry are associated with abnormal contralateral hip and knee loading after total hip replacement 57th Annual Meeting, Orthopaedic Research Society, 2011. *Poster Presentation* (New Investigator Recognition Award finalist)
34. Lundberg HJ, Rojas IL, **Foucher KC**, Wimmer MA. The Relationship between Muscle Activity and Gait Parameters for TKR Patients and Control Subjects 57th Annual Meeting, Orthopaedic Research Society, 2011.
35. Shakoor N, **Foucher KC**, Wimmer MA, Mikolaitis RA, Khandelwal S, Block JA. Gait alterations and their association with radiographic severity and pain in unilateral hip osteoarthritis. Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2010.
36. **Foucher KC**, Wimmer MA, Moio KC, Hildebrand M, Berger RA, Galante JO. Full Activity Recovery but Incomplete Biomechanical Recovery after Minimally Invasive Total Hip Arthroplasty 56th Annual Meeting Orthopaedic Research Society, 2010. *Poster Presentation*
37. **Foucher KC**, Wimmer MA, Moio KC, Hildebrand M, Berger RA, Galante JO. Recovery Rate and Extent after Two Minimally Invasive THA Approaches, American Academy of Orthopaedic Surgeons Annual Meeting, 2010. *Poster Presentation*
38. **Foucher KC**, Kannankeril G, Block JA, Shakoor N, Wimmer MA, Thorp LE. Gait Variability across the Spectrum of Knee Osteoarthritis, American College of Rheumatology/Association of Rheumatology Health Professionals, Annual Meeting 2009. *Poster Presentation*
39. **Foucher KC**, Orozco D, Berger RA, Wimmer MA. Relationships between habitual and laboratory walking speeds and clinical function after total hip replacement. 55th Annual Meeting Orthopaedic Research Society, 2009. *Poster Presentation*

40. Lundberg HJ, **Foucher KC**, Ngai V, Rojas IL, Swanson AJ, Wimmer MA. The influence of kinematic input variability on calculated knee joint contact forces. 55th Annual Meeting Orthopaedic Research Society, 2009.
41. **Foucher KC**, Hurwitz DE, Wimmer MA. Comparison of parametrically modeled hip forces to optimization based results and forces measured in vivo. 54th Annual Meeting Orthopaedic Research Society, 2008. *Poster Presentation*
42. Laurent MP, Mueller M, **Foucher KC**, Wimmer MA. Knee Joint Dynamics during Bicycling. A Comparison to Walking. 54th Annual Meeting Orthopaedic Research Society, 2008.
43. Rojas IL, Provencher MT, Bhatia S, **Foucher KC**, Bach B, Romeo A, Wimmer MA, Verma N. Windmill softball pitching vs. overhand throwing: Injury implications from biceps muscle activity. 54th Annual Meeting Orthopaedic Research Society, 2008.
44. Wimmer MA, Thorp LE, **Foucher KC**, Sumner DR, Shakoore N, Block JA. Hip Abductor Strengthening Reduces Medial Knee Loads and Palliates Knee Pain. Annual Meeting American College of Rheumatology/Association of Rheumatology Health Professionals, 2007.
45. Lidtke R, Wimmer MA, **Foucher KC**, Block JA. The Role of Rearfoot Mobility in the Long Term Response to Wedge Orthoses in Medial Knee OA. Annual Meeting American College of Rheumatology/Association of Rheumatology Health Professionals, 2007.
46. **Foucher KC**, Hurwitz DE, Wimmer MA. Gait adaptations and high implant twisting moments during stair climbing in subjects with total hip replacements. 31st Annual Meeting American Society of Biomechanics 2007. *Poster Presentation*
47. Trombley RM, **Foucher KC**, Berger RA, Wimmer MA. Gait adaptations and recovery rates following minimally invasive total hip replacement. 31st Annual Meeting American Society of Biomechanics 2007.
48. **Foucher KC**, Hurwitz DE, Wimmer MA. Gait adaptations are more important than positioning of the hip center in determining hip loading after total hip replacement surgery. 53rd Annual Meeting Orthopaedic Research Society, 2007.
49. Lidtke R, Goker B, Muehleman C, Wimmer M, **Foucher, KC**, Block, J. Lower extremity structural alignment and mobility determines if valgus wedged orthoses reduce knee adduction moments in medial knee osteoarthritis (OA). 53rd Annual Meeting Orthopaedic Research Society, 2007.
50. Wimmer MA, Thorp L, **Foucher KC**, Sumner DR, Block JA. Medial Knee Osteoarthritis (OA) is Associated with Reduced Hip Internal Rotation Moments. Annual Meeting American College of Rheumatology/Association of Rheumatology Health Professionals, 2006.
51. Lidtke R, Muehleman C, **Foucher K**, Wimmer M, Block J. Motion at Rearfoot Determines if Valgus Wedged Orthosis Reduce Knee Adduction Moments in Medial Knee Osteoarthritis (OA). Annual Meeting American College of Rheumatology/Association of Rheumatology Health Professionals 2006.

52. Lidtke R, Goker B, Meuhleman C, Wimmer M, **Foucher K**, Block J. Rearfoot mobility determines if valgus wedged orthoses reduce knee adduction moments in medial knee osteoarthritis (OA). Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2006.
53. Wimmer MA, Thorp LE, **Foucher KC**, Sumner DR, Block JA. Medial compartment loading and weak hip abductors in patients with knee OA: a pilot study of the effect of hip strengthening on joint loading. Osteoarthritis Research Society International, World Congress on Osteoarthritis, 2006.
54. **Foucher KC**, Wimmer MA, Hurwitz DE. Relationships between reconstructed hip center and hip forces after accounting for the effect of gait adaptations. 30th Annual Meeting American Society of Biomechanics, 2006. *Oral Presentation*
55. **Foucher KC**, Wimmer MA, Hurwitz DE. The influence of hip muscle activity on modeled hip contact forces during walking in subjects with total hip replacements. 5th World Congress of Biomechanics, 2006. *Oral Presentation*
56. **Foucher KC**, Wimmer MA, Hurwitz DE. Inter- and intra-subject variability of modeled hip forces in subjects with total hip replacements. 5th World Congress of Biomechanics, 2006. *Oral Presentation*
57. **Foucher KC**, Hurwitz DE, Andriacchi TP. Abductor and antagonist muscle force distributions substantially influence modeled hip forces in subjects with total hip replacements. 48th Annual Meeting Orthopaedic Research Society, 2002. *Poster Presentation*
58. **Foucher KC**, Hurwitz DE. An Evaluation of Hip Joint Contact Forces and Rotatory Torques During Walking and Stair Climbing. 5th Annual Meeting, Gait and Clinical Movement Analysis Society, 2000. *Poster Presentation*
59. **Foucher KC**, Hurwitz DE, Andriacchi TP. A new analytical parametric model that accurately predicts hip joint forces during normal and pathological gait. 46th Annual Meeting Orthopaedic Research Society, 2000. *Poster Presentation*
60. Lowinger DA, Hurwitz DE, **Foucher KC**, Goker B, Sumner DR, Block JA. Rate of progression of hip osteoarthritis relates to increased joint loads during gait. 46th Annual Meeting Orthopaedic Research Society, 2000.
61. **Foucher KC**, Hurwitz DE, Andriacchi TP. Gait adaptations in postoperative total hip replacement patients are associated with reduced hip contact force. 23rd Annual meeting of the American Society of Biomechanics 1999. *Oral Presentation (Winner Musculoskeletal Research Center of the University of Pittsburgh Medical Center Award)*
62. Hurwitz DE, **Foucher KC**. Implications of hip joint forces during gait. 12th Annual International Symposium for Technology in Arthroplasty, 1999.
63. **Foucher KC**, Hurwitz DE, Andriacchi TP, Rosenberg AG, Galante JO, Jacobs JJ. Hip joint load alterations in total hip replacement patients, American Society of Mechanical Engineering, Summer Bioengineering Conference, 1999. *Poster Presentation*

64. Buchanan B, Hurwitz DE, **Foucher KC**, Rosenberg AG, Galante JO, Andriacchi TP. Gait adaptations in patients with total hip replacements persist over time. 45th Annual Meeting Orthopaedic Research Society, 1999.
65. **Foucher KC**, Hurwitz DE, Sumner DR, Andriacchi TP, Rosenberg AG. An evaluation of muscle force predictions at the hip joint. International Mechanical Engineering Congress and Exposition, Bioengineering Division, 1998. *Poster Presentation*
66. **Foucher KC**, Soomekh D, Hurwitz DE, Andriacchi TP, Rosenberg AG, Galante JO. Factors influencing variation in gait adaptations after total hip replacement. 3rd Annual Meeting North American Society of Gait and Clinical Movement Analysis, Gait and Posture, 7(2):158-9, 1998. *Oral Presentation*.
67. Hurwitz DE, **Foucher KC**, Sumner DR, Andriacchi TP, Rosenberg AG. Bone density changes in osteoarthritis are associated with hip joint loading. 44th Annual Meeting Orthopaedic Research Society, 25, 1998.
68. Hurwitz DE, **Foucher KC**, Andriacchi TP, Rosenberg AG, Galante JO. Similarities between gait adaptations in preoperative and postoperative total hip replacement patients. American Society of Mechanical Summer Bioengineering Conference, 1997.
69. Hurwitz DE, **Foucher KC**, Sumner DR, Andriacchi TP, Galante JO, Rosenberg AG. Greater trochanter bone loss in preoperative total hip replacement patients is related to the hip adduction moment during gait. 21st Annual Meeting of American Society of Biomechanics, 252-3, 1997.
70. **Foucher KC**, Hurwitz DE, Andriacchi TP, Rosenberg AG, Galante JO. Reductions in hip contact forces due to gait adaptations in preoperative total hip replacement patients persist even if antagonistic muscle activity is increased. 21st Annual Meeting of American Society of Biomechanics, 192-3, 1997. *Poster Presentation*
71. Hurwitz DE, Sugar DA, Rottier F, **Foucher KC**, Sumner DR, Andriacchi TP. Dynamic Medial Loads During Gait Influence Tibial Bone Distribution. American Society of Mechanical Engineering, Summer Bioengineering Conference, BED vol 35:503-4, 1997. *Oral Presentation*.
72. Hurwitz DE, Sugar DA, Rottier F, **Foucher KC**, Sumner DR, Andriacchi TP, Rosenberg AG, Galante JO. Changes in Tibial Bone due to Dynamic Loading During Gait. 43rd Annual Meeting Orthopaedic Research Society, 1997.