

Curriculum Vitae
DAVID BENJAMIN LIPPS, Ph.D.

Assistant Professor, Movement Science, School of Kinesiology, University of Michigan
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EDUCATION:

- 8/2003 – 5/2007 **Tulane University** (New Orleans, LA)
B.S.E., Biomedical Engineering
Summa Cum Laude w/ Departmental Honors
- 8/2007 – 8/2012 **University of Michigan** (Ann Arbor, MI)
Ph.D., Biomedical Engineering (2012)
M.S.E., Biomedical Engineering (2009)
Research Advisors: James Ashton-Miller, Ph.D., Edward Wojtys, M.D.
Dissertation: Effect of Gender-Related Differences in Knee Morphology on Peak ACL Strain during Repeated Simulated Pivot Landings: An *in vitro* Investigation
- 8/2012 – 8/2015 **Northwestern University** (Evanston, IL)
Rehabilitation Institute of Chicago (Chicago, IL)
Postdoctoral Fellow, Biomedical Engineering and Sensory Motor Performance Program
Research Advisor: Eric Perreault, Ph.D.

PROFESSIONAL EXPERIENCE

- 9/2015 – Present **University of Michigan** (Ann Arbor, MI)
Assistant Professor, Movement Science, School of Kinesiology

EXTRAMURAL GRANTS:

- 7/2015 – 6/2017 **Susan G. Komen**, Clinical Postdoctoral Fellowship (\$120,000 Direct)
Primary Investigator
Uncovering mechanisms responsible for shoulder morbidity following radiotherapy
Goal: To understand the time progression and pathophysiology of shoulder dysfunction in women treated with radiotherapy using biomechanical measures and ultrasound

INTRAMURAL GRANTS:

- 11/2015 – 4/2017 **MCubed** (\$60,000 Direct)
Co-Primary Investigator (Sean Smith, Shruti Jolly)
Identifying and reversing physical impairments in breast cancer survivors

FELLOWSHIPS, HONORS & AWARDS:

- 2003 – 2007 Distinguished Scholar's Award (50% Tuition Waiver), Tulane University
- 2006 NIH Biomedical Engineering Summer Internship Program (one of sixteen nationally selected undergraduates), National Heart, Lung, and Blood Institute
- 2007 Best Design Project (2nd Place), Tulane University Biomedical Engineering Senior Design Show
- 2007 – 2008 Departmental Fellowship, University of Michigan Biomedical Engineering
- 2008 – 2011 National Defense Science and Engineering Graduate Fellowship, U.S. Department of Defense
- 2010 NCAA Committee Competitive Safeguards and Medical Aspects of Sports Research Award (co-author), American Medical Society for Sports Medicine
- 2011 Graduate Research Award, University of Michigan Institute for Research on Women and Gender
- 2011 Cabaud Memorial Award (Best Laboratory Research – co-author), American Orthopaedic Society for Sports Medicine (AOSSM)
- 2011 Best Poster Award (3rd Place), American Orthopaedic Society for Sports Medicine (AOSSM)
- 2012 Student Travel Grant, American Society of Biomechanics

March 129, 2016

2013 – 2015

Ruth L. Kirschstein National Research Service Award (T32-HD741822), National Institute of Child Health and Human Development

2015 – 2017

Susan G. Komen Clinical Postdoctoral Fellow

PUBLICATIONS IN REFEREED JOURNALS:

1. Wen H., Marsolo K.A., Bennett E.E., Kutten K.S., Lewis R.P., **Lipps D.B.**, Epstein N.D., Plehn J.F., & Croisille P. (2008). Adaptive postprocessing techniques for myocardial tissue tracking with displacement-encoded MRI. *Radiology*. 246(1):229-240. PMID: PMC2881596
2. Seidler R.D., Bernard J.A., Burutolu T.B., Fling B.W., Gordon M.T., Gwin J.T., Kwak Y., & **Lipps D.B.** (2010). Motor control and aging: Links to age-related brain structural, functional, and biochemical effects. *Neuroscience & Biobehavioral Reviews*. 34(5):721-733. PMID: PMC2838968
3. Eckner J.T., **Lipps D.B.**, Kim H., Richardson J.K., & Ashton-Miller J.A. (2011). Can a clinical test of reaction time predict a sport-specific functional response? *Medicine & Science in Sports & Exercise*. 43(3):382-387.
4. **Lipps D.B.**, Galecki A.G., & Ashton-Miller J.A. (2011). On the implications of a sex difference in reaction times of sprinters at the Beijing Olympics. *PLoS ONE*. 6(10):e26141. PMID: PMC3198384
5. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2012). Morphologic characteristics help explain the gender difference in peak anterior cruciate ligament strain during a simulated pivot landing. *American Journal for Sports Medicine*, 40(1):32-40.
6. Oh Y.K., **Lipps D.B.**, Ashton-Miller J.A., & Wojtys E.M. (2012). What strains the anterior cruciate ligament during a pivot landing? *American Journal for Sports Medicine*, 40(3):574-583.
7. Eckner J.T., Richardson J.K., Kim H., **Lipps D.B.**, & Ashton-Miller J.A. (2012). A novel clinical test of recognition reaction time in healthy adults." *Psychological Assessment*. 24(1):249-254.
8. **Lipps D.B.**, Wilson A.M, Ashton-Miller J.A., & Wojtys E.M. (2012). Evaluation of different methods for measuring lateral tibial slope using magnetic resonance imaging. *American Journal for Sports Medicine*, 40(12):2731-2736.
9. **Lipps D.B.**, Eckner J.T., Richardson J.K., & Ashton-Miller J.A. (2012). How gender and task difficulty affect a sport-protective response in young adults. *Journal of Sports Sciences*. 31(7):723-730. PMID: PMC3608833
10. **Lipps D.B.**, Wojtys E.M., & Ashton-Miller, J.A. (2013). Anterior cruciate ligament fatigue failures in knees subjected to repeated simulated pivot landings. *American Journal for Sports Medicine*, 41(5):1058-1066.
11. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2014). An increase in quadriceps tensile stiffness decreases peak anterior cruciate ligament strain during a simulated landing. *Journal of Orthopaedic Research*, 32(3): 423-430.

PUBLICATIONS IN PREPARATION:

1. **Lipps D.B.**, Wang B., Perreault E.J. & Lee S.S.M. The effect of skin motion on dynamic musculoskeletal ultrasound of the lower extremity.
2. **Lipps D.B.** & Ashton-Miller J.A. The Absence of a Sex Difference in the Reaction Times of Elite Sprinters at the 2012 London Olympics.
3. **Lipps D.B.**, Baillargeon E., Ludvig D., & Perreault E.J. Identification of multidimensional shoulder impedance with volitional contractions.

PEER-REVIEWED CONFERENCE PROCEEDINGS:

1. **Lipps D.B.**, Baillargeon E., Ludvig D., & Perreault E.J. (2015). Identification of multidimensional shoulder impedance with passive and active muscles. Invited podium presentation at the 17th IFAC Symposium on System Identification, Beijing, China. (In press)

CONFERENCE PROCEEDINGS:

1. **Lipps D.B.** & Wen H. (2006). Anatomically guided spatial filters in displacement encoded MR imaging of the heart. Poster presentation at 2006 NIH Summer Research Student Poster Day, Bethesda, MD.
2. **Lipps D.B.**, Florine E.M., Anderson R.C., & Overby D.R. (2007). A computational model of dynamic applanation tonography. Poster presented at the 2007 Biomedical Engineering Society Annual Fall Meeting, Los Angeles, CA.

3. Linsenmeier R.A., Pazos P., **Lipps D.B.**, & Dwyer K.L. (2007). Work in Progress: Assessment of an electronic learning management system in bioengineering. Podium presentation at 2007 Frontiers in Education Conference, Milwaukee, WI.
4. **Lipps D.B.**, Eckner J.T., Richardson J.K., Galecki A., & Ashton-Miller J.A. (2009). On gender differences in the reaction times of sprinters at the 2008 Beijing Olympics. Poster presentation at The Annual Meeting of the American Society of Biomechanics, State College, PA.
5. **Lipps D.B.**, Eckner J.T., Richardson J.K., & Ashton-Miller J.A. (2009). The effect of gender and perceived threat on the reaction and movement times of young adults performing a simulated sport-protective response. Podium presentation at The Annual Meeting of the American Society of Biomechanics, State College, PA.
6. Richardson J.K., Eckner J.T., Kim H., **Lipps D.B.**, & Ashton-Miller J.A. (2010). Can a clinical measure of reaction time predict a sport-specific functional response? Podium presentation and NCAA Research Award at the Annual Meeting American Medical Society for Sports Medicine, Cancun, Mexico.
7. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2011). The effect of ACL cross-sectional area on ACL strain under compound impulsive loading. Short talk and poster presentation at the Annual Meeting of the Orthopaedic Research Society, Long Beach, CA.
8. Oh, Y.K., **Lipps D.B.**, Ashton-Miller J.A., & Wojtys E.M. (2011). The effect of axial tibial rotation and varus or valgus loading on ACL strain during a simulated jump landing. Caubaud Award Memorial Presentation at Annual Meeting of the American Orthopaedic Society for Sports Medicine, San Diego, CA.
9. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2011). Gender helps determine peak ACL strain. Poster presentation at Annual Meeting of the American Orthopaedic Society for Sports Medicine, San Diego, CA.
10. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2011). ACL cross-sectional area and medial tibial plateau geometry provide insights on the gender difference in peak ACL strain. Podium presentation at the Annual Meeting of the American Society of Biomechanics, Long Beach, CA.
11. Bush C.J., **Lipps D.B.**, Ashton-Miller J.A., & Wojtys E.M. (2012). Intercondylar notch width and ACL cross-sectional area predict peak ACL strain. Poster presentation at the Annual Meeting of the Orthopaedic Research Society, San Francisco, CA.
12. **Lipps D.B.**, Wilson A., Ashton-Miller J.A., & Wojtys E.M. (2012). Posterior tibial slope measurements are not all alike. Poster presentation at the Annual Meeting of the Orthopaedic Research Society, San Francisco, CA.
13. **Lipps D.B.**, Oh Y.K., Ashton-Miller J.A., & Wojtys E.M. (2012). Influence of knee morphological characteristics on peak ACL strain during simulated pivot landings. Podium presentation at the ACL Research Retreat VI, Greensboro, NC.
14. **Lipps D.B.**, Wojtys E.M., & Ashton-Miller J.A. (2012). On the fatigue life of the anterior cruciate ligament during a simulated pivot landing. Podium presentation at the Annual Meeting of the American Society of Biomechanics, Gainesville, FL.
15. **Lipps D.B.**, Baillargeon E., Sandercock T.G., & Perreault E.J. (2013). The passive contributions of the vastus medialis and vastus lateralis to knee extension and hip flexion. Poster presentation at the Annual Meeting of the American Society of Biomechanics, Omaha, NE.
16. Oh Y.K., Beaulieu M.L., **Lipps D.B.**, Wojtys E.M., & Ashton-Miller J.A. (2013). Is the strain concentration at the femoral enthesis a risk factor for anterior cruciate ligament injury? Podium presentation at the Annual Meeting of the American Society of Biomechanics, Omaha, NE.
17. **Lipps D.B.**, Baillargeon E., Sandercock T.G., & Perreault E.J. (2013). Myofascial contributions to the human quadriceps during passive hip flexion and knee extension. Podium presentation at the Annual Meeting of the Biomedical Engineering Society, Seattle, WA.
18. **Lipps D.B.**, Baillargeon E., Lee S., Wang B., Perreault E.J., & Sandercock T.G. (2014). Shear wave elastography provides a measure of active muscle stiffness in the feline soleus. Poster presentation at the 7th World Congress of Biomechanics, Boston, MA.
19. **Lipps D.B.**, Lee S., Wang B., & Perreault E.J. (2014). The effect of skin motion on dynamic musculoskeletal ultrasound. Poster presentation at the Annual Meeting of the Biomedical Engineering Society, San Antonio, TX.

20. **Lipps D.B.**, Baillargeon E., Ludvig D., & Perreault E.J. (2015). Identification of multidimensional shoulder impedance with passive and active muscles. Podium presentation at the Annual Meeting of the American Society of Biomechanics, Columbus, Ohio.
21. **Lipps D.B.**, Lee S., Wang B., & Perreault E.J. (2015). The effect of skin motion on dynamic ultrasound of the vastus lateralis. Poster presentation at the Annual Meeting of the American Society of Biomechanics, Columbus, Ohio.
22. Sohn M.H., Baillargeon E.M., **Lipps D.B.**, & Perreault E.J. (2016) Heteronymous models are needed to describe shoulder stretch reflexes. Submitted to XVI Congress of the International Society of Electrophysiology and Kinesiology, Chicago, IL.
23. **Lipps D.B.** & Strauss, J. (2016) Quantifying the radiation dose delivered to individual shoulder muscles during breast cancer radiation therapy treatments. Submitted to Annual Meeting of the American Society of Biomechanics, Raleigh, NC.

INVITED TALKS:

1. Sensory Motor Performance Program Seminar, Rehabilitation Institute of Chicago, Chicago, IL (December, 2011). 'Effect of gender-related differences in knee morphology and quadriceps stiffness on peak anterior cruciate ligament strain during pivot landings.'
2. School of Kinesiology, University of Michigan, Ann Arbor, MI (November, 2014). 'Appreciating the link between tissue structure and joint function: Implications for breast cancer rehabilitation.'
3. Joint Biomedical Engineering Department, University of North Carolina and North Carolina State University, Chapel Hill, North Carolina (December, 2014). 'Appreciating the link between tissue structure and joint function.'

MENTORSHIP

PhD Students

2015 – Current Joshua Leonardis, M.S., Pre-candidate in Kinesiology

TEACHING EXPERIENCE:

2005, 2007 **Vanderbilt/Northwestern/Texas/Harvard-MIT Engineering Research Center**
Research Assistant
 • Developed adaptive online tutorials for bioengineering courses

2013 - 2014 **Northwestern University**
Searle Teaching Certificate Program

4/2014 **Northwestern University**
 Quantitative Experimentation & Design (BME 307) – Co-instructor

University of Michigan
 Musculoskeletal Biomechanics (MOVESCI 330) – Fall 2015
 Musculoskeletal Imaging (MOVESCI 438) – Winter 2016

LEADERSHIP:

2003 - 2007 Tulane University Campus Programming
President, Vice President, Concerts chair
 • Managed largest student budget on campus (\$230k annual)

2012 - 2015 Rehabilitation Institute of Chicago: Neuromuscular Control and Plasticity Lab
Institutional Review Board Study Coordinator
 • Manage IRB applications for three studies

PROFESSIONAL ACTIVITIES:

Conference Service

8/2008 **North American Congress on Biomechanics** (Ann Arbor, MI)
Technical Support

8/2013 **American Society of Biomechanics** (Omaha, NE)
Session Co-Chair, Lower Extremity: ACL

10/2014

Biomedical Engineering Society (San Antonio, TX)

Session Co-Chair, Orthopaedic and Rehabilitation Engineering: Prosthetics and Wearable Devices

Manuscript Reviewer Service

- Journal of Applied Biomechanics
- Journal of Orthopaedic Research
- Sports Biomechanics
- PLoS ONE
- American Journal of Sports Medicine

Grant Reviewer Service

2013 - 2015

National Defense Science & Engineering Graduate Fellowship, Biosciences Review Panel

2016

NSF Graduate Research Fellowship Program, Biomedical Engineering Review Panel

Membership

- American Society of Biomechanics
- Biomedical Engineering Society