

JOSHUA M. LEONARDIS, PHD

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EDUCATION

University of Michigan PhD - Kinesiology - Biomechanics	<i>2015-2020</i>
East Carolina University MS - Kinesiology - Biomechanics	<i>2011-2013</i>
Salisbury University BS - Exercise Science	<i>2005-2009</i>

PROFESSIONAL EXPERIENCE

University of Illinois Urbana-Champaign Assistant Professor, College of Applied Health Sciences Director, Musculoskeletal Morphology and Biomechanics Laboratory Co-Director, Movement Analysis Laboratory	<i>November 2022 - Present</i>
University of Wisconsin-Milwaukee Postdoctoral Research Fellow - Rehabilitation Engineering	<i>September 2020 - November 2022</i>
University of Michigan Graduate Research Assistant, Musculoskeletal Biomechanics and Imaging Laboratory Graduate Student Instructor, School of Kinesiology	<i>August 2015 - August 2020</i>
National Institute for Occupational Safety and Health Biomechanist, Engineering Control and Technology Branch	<i>July 2013 - August 2015</i>
East Carolina University Graduate Research Assistant, Biomechanics Laboratory Graduate Teaching Assistant, Department of Kinesiology	<i>August 2011 - July 2013</i>

HONORS & AWARDS

University of Wisconsin-Milwaukee Vogel Award	<i>American Spinal Injury Association (2022)</i>
University of Michigan Predoctoral Scientist Award Doctoral Student Research Grant Translational Research Award Congress Travel Award Zatkoff Family Fellowship Domestic Conference Travel Grant Graduate Student Research Grant Summer Fellowship Golden Apple Teaching Award International Conference Travel Grant Congress Travel Award	<i>American Society of Biomechanics (2020)</i> <i>Rackham Graduate School (2020)</i> <i>International Shoulder Group (2018)</i> <i>American Society of Biomechanics (2018)</i> <i>School of Kinesiology (2018)</i> <i>Rackham Graduate School (2018)</i> <i>Rackham Graduate School (2017)</i> <i>Rackham Graduate School (2017)</i> <i>School of Kinesiology (2017)</i> <i>Rackham Graduate School (2017)</i> <i>American Society of Biomechanics (2017)</i>

Congress Travel Award
Domestic Conference Travel Grant

International Society of Biomechanics (2017)
Rackham Graduate School (2016)

East Carolina University
Research Excellence Award
Out of State Tuition Award

Department of Kinesiology (2012)
Department of Kinesiology (2011-2013)

PEER-REVIEWED PUBLICATIONS

1. **J. Leonardis**, A. Schnorenberg, L. Vogel, G. Harris, B. Slavens, “Sex-Related Differences in Shoulder Complex Dynamics Variability during Pediatric Manual Wheelchair Propulsion”, *Journal of Applied Biomechanics*, 2022, **In Review**
2. T. Lulic-Kuryllo, **J. Leonardis**, A. Momoh, D. Lipps, “Assessing Stretch Reflexes Following Breast Cancer Treatment and Post-Mastectomy Breast Reconstruction”, *Journal of Neurophysiology*, 2022, doi.org/10.1152/jn.00081.2022
3. **J. Leonardis**, A. Schnorenberg, L. Vogel, G. Harris, B. Slavens, “The Influence of Age at Pediatric-Onset Spinal Cord Injury and Years of Wheelchair Use on Shoulder Complex Joint Dynamics During Manual Wheelchair Propulsion”, *Archives of Rehabilitation Research and Clinical Translation*, 2022, doi:10.1016/j.arct.2022.100235
4. **J. Leonardis**, T. Lulic-Kuryllo, D. Lipps, “The Impact of Local Therapies for Breast Cancer on Shoulder Muscle Health and Function”, *Reviews in Oncology and Hematology*, 2022, doi.org/10.1016/j.critrevonc.2022.103759
5. C. Setlock, T. Lulic-Kuryllo, **J. Leonardis**, M. Kulik, D. Lipps, “Age and Sex Influence the Activation-Dependent Stiffness of the Pectoralis Major”, *Journal of Anatomy*, 2021, doi.org/10.1111/joa.13455
6. M. Hanks, **J. Leonardis**, A. Schnorenberg, J. Krzak, A. Graf, L. Vogel, G. Harris, B. Slavens, “The Influence of Sex on Upper Extremity Joint Dynamics in Pediatric Manual Wheelchair Users with Spinal Cord Injury”, **Vogel Award for Best Research in Pediatric Spinal Cord Injury Rehabilitation**, *Topics in Spinal Cord Injury Rehabilitation*, 2021, doi.org/10.46292/sci20-00057
7. C. Miller, A. Schnorenberg, **J. Leonardis**, K. Garlanger, S. Kortess, J. Riebe, J. Plesnik, K. Lee, B. Slavens, “Biomechanical Analysis of Wheelchair Athletes with Paraplegia during Cross-Training Exercises”, *Journal of Spinal Cord Medicine*, 2021, doi.org/10.1080/10790268.2021.1928868
8. **J. Leonardis**, W. Wolff, A. Momoh, D. Lipps, “Neuromuscular Compensation Strategies Adopted at the Shoulder Following Bilateral Subpectoral Implant Breast Reconstruction”, *Journal of Biomechanics*, 2021, doi.org/10.1016/j.jbiomech.2021.110348
9. **J. Leonardis**, D. Lyons, K. Kidwell, A. Giladi, D. Lipps, A. Momoh, “The Influence of Functional Shoulder Biomechanics as a Mediator of Patient Reported Outcomes Following Mastectomy and Breast Reconstruction”, *Plastic and Reconstructive Surgery*, 2021, doi.org/10.1097/PRS.0000000000007486
10. W. Wolff, **J. Leonardis**, D. Lipps, “Spatial Tuning of Neural and Mechanical Properties of the Sternocleidomastoid Muscle During 3-D Torque Production”, *Journal of Electromyography and Kinesiology*, 2020, doi.org/10.1016/j.jelekin.2020.102480

11. **J. Leonardis**, A. Alkayyali, D. Lipps, “Posture-Dependent Neuromuscular Contributions to Three-Dimensional Isometric Shoulder Torque Generation”, *Journal of Neurophysiology*, 2020, doi.org/10.1152/jn.00702
12. D. Lipps, **J. Leonardis**, R. Dess, G. McGinnis, R. Marsh, J. Strauss, J. Hayman, L. Pierce, R. Jagsi, “Mechanical Properties of the Shoulder and Pectoralis Major in Breast Cancer Patients Undergoing Breast-Conserving Surgery with Axillary Surgery and Radiotherapy”, *Scientific Reports*, 2019, doi.org/10.1038/s41598-019-54100-6
13. **J. Leonardis**, D. Lyons, A. Giladi, A. Momoh, D. Lipps, “The Functional Integrity of the Shoulder Joint and Pectoralis Major Following Subpectoral Implant Breast Reconstruction”, *Journal of Orthopaedic Research*, 2019, doi.org/10.1002/jor.24257
14. **J. Leonardis**, B. Diefenbach, D. Lyons, T. Olinger, A. Giladi, A. Momoh, D. Lipps, “The Influence of Reconstruction Choice and Inclusion of Radiation Therapy on Functional Shoulder Biomechanics in Women Undergoing Mastectomy for Breast Cancer”, *Breast Cancer Research and Treatment*, 2019, doi.org/10.1007/s10549-018-5003-8
15. P. DeVita, J. Aaboe, **J. Leonardis**, H. Bliddal, M. Henriksen, C. Bartholdy, “The Effect of Quadriceps Strengthening Exercise on Quadriceps and Knee Biomechanics During Walking in Knee Osteoarthritis: A Two-Centre Randomized Controlled Trial”, *Clinical Biomechanics*, 2018, doi.org/10.1016/j.clinbiomech.2018.09.016
16. B. Luciani, D. Desmet, A. Alkayyali, **J. Leonardis**, D. Lipps, “Identifying the Mechanical and Neural Properties of the Sternocleidomastoid Muscles”, *Journal of Applied Physiology*, 2018, doi:10.1152/jappphysiol.00892.2017
17. **J. Leonardis**, D. Desmet, D. Lipps, “Quantifying Differences in the Material Properties of the Fiber Regions of the Pectoralis Major Using Ultrasound Shear Wave Elastography”, *Journal of Biomechanics*, 2017, doi.org/10.1016/j.jbiomech.2017.07.031
18. J. Cowley, **J. Leonardis**, D. Lipps, D. Gates, “The Influence of Wrist Posture, Grip Type, and Grip Force on Median Nerve Shape and Cross-Sectional Area”, *Clinical Anatomy*, 2017, doi.org/10.1002/ca.22871

INVITED PRESENTATIONS, SEMINARS, SYMPOSIA

1. **J. Leonardis**, “Visualizing Experimental Data - Illustration for Scientists”, *Seminar: Research in Engineering, Healthcare, and Biomechanics Speaker Series, College of Rehabilitation Sciences and Technology, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin*, 2021
2. D. Lipps, **J. Leonardis**, R. Jagsi, “Changes to the Material Properties of the Pectoralis Major with Radiation Therapy”, *Symposium: The Evolving Role of Biomechanics for Improving the Health and Performance of Cancer Patients, 45th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia*, 2021
3. **J. Leonardis**, “The Influence of Subpectoral Implant Breast Reconstruction on Shoulder and Upper Extremity Muscle Function in Women Undergoing Mastectomy for Breast Cancer”, *Biomedical Engineering Seminar Series, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin*, 2020
4. **J. Leonardis**, “The Influence of Breast Reconstruction Choice on Functional Shoulder Biomechanics in Women Undergoing Mastectomy for Breast Cancer”, **Doctoral Thesis Competi-**

tion, *Proceedings of the 44th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2020*

5. **J. Leonardis**, W. Wolff, A. Momoh, D. Lipps, “Neuromuscular Compensation Strategies Adopted at the Shoulder Following Bilateral Subpectoral Implant Breast Reconstruction”, **Young Scientist Pre-Doctoral Award**, *Proceedings of the 44th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2020*
6. **J. Leonardis**, “The Influence of Shoulder Muscle Disinsertion on Shoulder Joint Integrity and Upper Extremity Muscle Function”, *Curtis National Hand Center, Baltimore, MD, 2020*
7. **J. Leonardis**, “The Influence of Breast Reconstruction Choice on Functional Shoulder Biomechanics in Women Undergoing Mastectomy for Breast Cancer”, *Henry Ford Health System Bone and Joint Center, Detroit, MI, 2020*

PEER-REVIEWED CONFERENCE PROCEEDINGS

1. **J. Leonardis**, A. Schnorenberg, L. Vogel, G. Harris, B. Slavens, “The Effects of Biological Sex on Glenohumeral Joint Motion, Force, and Moment Variability during Pediatric Manual Wheelchair Propulsion”, *Archives of Physical Medicine and Rehabilitation*, 2021, doi.org/10.1016/j.apmr.2021.07.687
2. **J. Leonardis**, A. Qashqai, O. Wilwert, A. Schnorenberg, M. Muriello, D. Basel, B. Slavens, “Three-Dimensional Motion of the Shoulder Complex during Activities of Daily Living in Youths with Hypermobility Ehlers-Danlos Syndrome”, *Archives of Physical Medicine and Rehabilitation*, 2021, doi.org/10.1016/j.apmr.2021.07.509
3. **J. Leonardis**, A. Schnorenberg, L. Vogel, G. Harris, B. Slavens, “Biological Sex-Related Differences in Glenohumeral Dynamics Variability during Pediatric Manual Wheelchair Propulsion”, *2021 43rd Annual International Conference on Engineering in Medicine and Biology (EMBC)*, 2021, doi.org/10.1109/EMBC46164.2021.9630865
4. D. Lipps, **J. Leonardis**, B. Diefenbach, D. Lyons, T. Olinger, & A. Momoh, “Evaluating Shoulder Stiffness Following Post-Mastectomy Breast Reconstruction”, *Archives of Physical Medicine and Rehabilitation*, 2017, doi.org/10.1016/j.apmr.2017.08.205
5. J. Aaboe, M. Henriksen, C. Bartholdy, **J. Leonardis**, Rider, L. Jorgensen, R. Christensen, H. Bliddal, P. DeVita, “The Effect of Quadriceps Strengthening Exercise on Quadriceps and Knee Biomechanics During Walking in Adults with Knee Osteoarthritis: A Randomized Controlled Trial”, *Proceedings of the World Congress of the Osteoarthritis Research Society International (OARSI), Paris, France, 2014*, doi.org/10.1016/j.joca.2014.02.161

CONFERENCE PROCEEDINGS

1. C. Cordes, **J. Leonardis**, A. Schnorenberg, S. Mukherjee, K. Goodfriend, A. Seitz, L. Vogel, B. Slavens, “Shoulder Pain and Variability of Wheelchair Handrim Kinetics in Spinal Cord Injury”, *Proceedings of the 45th Annual Meeting of the American Society of Biomechanics, Knoxville, TN, 2023*
2. C. Cordes, **J. Leonardis**, J. Samet, A. Schnorenberg, M. England, S. Mukherjee, L. Vogel, A. Seitz, B. Slavens, “Relationships Between Manual Wheelchair Handrim Kinetics and Shoulder Quantitative Ultrasound Parameters”, *Gait and Clinical Movement Analysis Society Annual Conference, High Point, NC, 2023*

3. **J. Leonardis**, A. Schnorenberg, L. Vogel, G. Harris, B. Slavens, "Sex-Specific Changes in Shoulder Complex Dynamics during the Transition to Adulthood in Manual Wheelchair Users with Pediatric-Onset Spinal Cord Injury", *North American Congress on Biomechanics, Ottawa, Canada, 2022*
4. T. Lulic-Kuryllo, C. Setlock, **J. Leonardis**, M. Kulik, D. Lipps, "Investigating the Influence of Age and Sex on the Activation-Dependent Stiffness of the Pectoralis Major Using Ultrasound Shear-Wave Elastography", *Proceedings of the 31st Annual Meeting of the International Society of Electrophysiology and Kinesiology, Quebec City, Canada, 2022*
5. M. Zarenia, S. Schwartz, **J. Leonardis**, A. Schnorenberg, V. Arpinar, B. Slavens, K. Koch, "Correlation of 4D MRI and Motion Capture during Dynamic Wrist Movements", *Proceedings of the 31st Joint Annual Meeting of the International Society for Magnetic Resonance in Medicine, European Society for Magnetic Resonance in Medicine and Biology, and the Society for Magnetic Resonance Radiographers and Technologists, London, England, UK, 2022*
6. **J. Leonardis**, M. Hanks, A. Schnorenberg, L. Vogel, B. Slavens, "Transition to Adulthood Following Pediatric Spinal Cord Injury: Changes in Shoulder Complex Movement Variability", *Proceedings of the 12th Annual Scientific Meeting of the American Spinal Injury Association, New Orleans, Louisiana, 2022*
7. **J. Leonardis**, S. Schwartz, C. Cordes, M. Zarenia, A. Schnorenberg, K. Koch, B. Slavens, "Exploring the Influence of Scaphoid, Lunate, and Distal Radius Shape on Wrist Motion", *Proceedings of the Annual Meeting of the Orthopaedic Research Society, Tampa, Florida, 2022*
8. M. Zarenia, S. Schwartz, **J. Leonardis**, A. Schnorenberg, V. Arpinar, B. Slavens, K. Koch, "Validation of MRI Kinematic Profiles of Wrist Carpal Bones by External Motion Capture System", *Proceedings of the Annual Meeting of the Orthopaedic Research Society, Tampa, Florida, 2022*
9. **J. Leonardis**, C. Cordes, A. Seitz, S. Mukherjee, B. Slavens, "Reliability of Quantitative Rotator Cuff Ultrasonography for Manual Wheelchair Users with Pediatric Onset Spinal Cord Injury", *Proceedings of the 27th Annual Meeting of the Steel Assembly, Orlando, Florida, 2021*
10. **J. Leonardis**, C. Cordes, A. Seitz, S. Mukherjee, B. Slavens, "Feasibility of Quantitative Shoulder Ultrasound in Pediatric Wheelchair Users", *Proceedings of the 45th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2021*
11. **J. Leonardis**, A. Qashqai, O. Wilwert, A. Schnorenberg, M. Muriello, D. Basel, B. Slavens, "Shoulder Complex Kinematics in Youths with Hypermobile Ehlers-Danlos Syndrome", *Proceedings of the 45th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2021*
12. A. Qashqai, **J. Leonardis**, M. Muriello, D. Basel, B. Slavens, "Characterization of Gait Dynamics in Children with Hypermobile Ehlers-Danlos", *Proceedings of the 45th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2021*
13. T. Lulic, **J. Leonardis**, A. Momoh, D. Lipps, "Assessing Stretch Reflexes Following Post-Mastectomy Breast Reconstruction", *Proceedings of the 45th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2021*
14. K. Koch, M. Zarenia, V. Emre Arpinar, L. Tugan Muftuler, A. Schnorenberg, **J. Leonardis**,

- B. Slavens, A. Nencka, “Viability Assessment of Carpal Bone Kinematic Profiles Developed Using 4D MRI”, *Proceedings of the Annual Meeting of the International Society for Magnetic Resonance in Medicine, Vancouver, Canada, 2021*
15. M. Hanks, **J. Leonardis**, A. Schnorenberg, K. Lee, B. Slavens, “Quantification of Trunk and Upper Extremity Kinematic Differences between Able-Bodied Lacrosse Players and Wheelchair Lacrosse Players with Spinal Cord Injury during Overhead Throwing”, *Proceedings of the 11th Annual Scientific Meeting of the American Spinal Injury Association, St. Louis, Missouri, 2021*
 16. **J. Leonardis**, M. Hanks, A. Schnorenberg, L. Vogel, B. Slavens, “Influence of Sex on Joint Dynamics during Wheelchair Propulsion in Children with Spinal Cord Injury”, *Proceedings of the 11th Annual Scientific Meeting of the American Spinal Injury Association, St. Louis, Missouri, 2021*
 17. **J. Leonardis**, W. Wolff, A. Momoh, D. Lipps, “Neuromuscular Compensation Strategies Underlying Shoulder Torque Generation Following Bilateral Subpectoral Implant Breast Reconstruction”, *National Institutes of Health, Rehabilitation Research 2020: Envisioning a Functional Future, Virtual, 2020*
 18. **J. Leonardis**, A. Momoh, D. Lipps, “Choosing Mastectomy and Breast Reconstruction or Breast Conserving Therapy: Implications for Pectoralis Major Function”, *Proceedings of the 44th Annual Meeting of the American Society of Biomechanics, Georgia Institute of Technology, Atlanta, Georgia, 2020*
 19. **J. Leonardis**, D. Lyons, A. Giladi, A. Momoh, D. Lipps, “Shoulder Biomechanics as a Mediator of Clinical Outcomes Following Three Common Breast Reconstruction Techniques”, *Proceedings of the 28th Congress of the International Society of Biomechanics, Calgary, Canada, 2019*
 20. **J. Leonardis**, B. Diefenbach, D. Lyons, T. Olinger, A. Giladi, A. Momoh, D. Lipps, “Biomechanical and Patient-Reported Functional Outcomes of the Shoulder Following Mastectomy and Breast Reconstruction”, *Proceedings of the 12th Meeting of the International Shoulder Group, Mayo Clinic, Rochester, Minnesota, 2018*
 21. **J. Leonardis**, R. Coffin, D. Lipps, “Accuracy of Group Analyses in Representing Shoulder Muscles Coordination Patterns of the Individual”, *Proceedings of the Meeting of the 42nd Annual Meeting of the American Society of Biomechanics, Mayo Clinic, Rochester, Minnesota, 2018*
 22. D. Lipps, **J. Leonardis**, S. Lehmann, R. Dess, G. McGinnis, J. Strauss, J. Hayman, L. Pierce, R. Jagsi, “Mechanical Properties of the Shoulder and Pectoralis Major in Women Undergoing Breast Conserving Therapy with Axillary Dissection and Regional Nodal Radiotherapy Versus Sentinel Node Biopsy and Radiotherapy to the Breast Alone”, *San Antonio Breast Cancer Symposium, San Antonio, Texas, 2018*
 23. D. Lyons, **J. Leonardis**, T. Olinger, B. Diefenbach, A. Giladi, D. Lipps, A. Momoh. “The Effects of Implant-Based Breast Reconstruction on Multidimensional Shoulder Function”, *Dingman Research Symposium, Michigan Medicine, Ann Arbor, Michigan, 2018*
 24. D. Lyons, **J. Leonardis**, T. Olinger, A. Giladi, A. Momoh, D. Lipps, “Upper Extremity Morbidity Following Implant-Based Breast Reconstruction: A Pilot Study”, *Proceedings of the Annual Meeting of the American Society for Reconstructive Microsurgery, Fajardo, Puerto Rico, 2018*
 25. **J. Leonardis**, B. Diefenbach, D. Lyons, T. Olinger, A. Giladi, A. Momoh, D. Lipps, “The

- Impact of Post-Mastectomy Breast Reconstruction Surgeries on Shoulder Stiffness”, *Proceedings of the Meeting of the 41st Annual Meeting of the American Society of Biomechanics, University of Colorado-Boulder, Boulder, Colorado, 2017*
26. **J. Leonardis**, D. Desmet, D. Lipps, ”Shoulder Posture, Torque Magnitude, and Torque Direction Highlight the Heterogeneous Elasticity of the Pectoralis Major Fiber Regions”, *Proceedings of the Meeting of the 41st Annual Meeting of the American Society of Biomechanics, University of Colorado-Boulder, Boulder, Colorado, 2017*
 27. **J. Leonardis**, D. Desmet, D. Lipps, “The Heterogeneity of the Elastic Properties of the Pectoralis Major Fiber Regions Across Postures and Volitional Contractions”, *Proceedings of the 27th Congress of the International Society of Biomechanics, Brisbane, Australia, 2017*
 28. D. Desmet, **J. Leonardis**, D. Lipps, “The Heterogeneity of the Elastic Properties of the Pectoralis Major Fiber Regions Across Postures and Volitional Contractions”, *Proceedings of the Meeting of the Midwest American Society of Biomechanics, Grand Valley State University, Grand Rapids, Michigan, 2017*
 29. P. Rider, R. Leonard, D. Kemble, **J. Leonardis**, “Bilateral Symmetry During a Power Clean in Recreational vs. Competitive Weightlifters”, *Proceedings of the 39th Annual Meeting of the American Society of Biomechanics, Ohio State University, Columbus, Ohio, 2015*
 30. R. Leonard, T. Snipes, C. Kemble, **J. Leonardis**, P. Rider, “Peak Ground Reaction Force Differences during a Power Clean Between Left and Right Legs of Competitive and Recreational Weightlifters”, *12th Annual Human Movement Research Symposium, University of North Carolina-Chapel Hill, Chapel Hill, North Carolina, 2015*
 31. **J. Leonardis**, F. Buczek, E. Sinsel, W. Selbie, T. Kepple, H. Sommer III, “A Sparse Motion Capture Development Platform Accurately Predicts Lower Extremity Biomechanics During Occupational Lifting Tasks”, *Proceedings of the 7th Annual World Congress of Biomechanics, Boston, Massachusetts, 2014*
 32. P. DeVita, **J. Leonardis**, M. Henriksen, C. Bartholdy, P. Rider, L. Jørgensen, R. Christensen, H. Bliddal, J. Aaboe, “The Effect of Quadriceps Strengthening Exercise on Quadriceps and Knee Biomechanics during Stair Ascent and Descent in Adults with Knee Osteoarthritis”, *Proceedings of the 7th Annual World Congress of Biomechanics, Boston, Massachusetts, 2014*
 33. **J. Leonardis**, E. Sinsel, S. Selbie, H. Sommer III, F. Buczek, “Validity of a Sparse Motion Capture Development Platform for Use in Occupational Biomechanics”, *Proceedings of the Meeting of the Midwest American Society of Biomechanics, University of Akron, Akron, Ohio, 2014*
 34. F. Buczek, E. Sinsel, **J. Leonardis**, W. Selbie, T. Kepple H. Sommer III, “A Sparse Motion Capture Development Platform for Use in Occupational Biomechanics”, *Proceedings of the 19th Annual Meeting of the Gait and Clinical Movement Analysis Society, University of Delaware, Newark, Delaware, 2014*
 35. **J. Leonardis**, J. Black, A. Kulas, Z. Domire, “Reliability of Ultrasound-Obtained Subject-Specific Parameters”, *7th Annual Research and Creative Achievement Week, East Carolina University, Greenville, North Carolina, 2013*
 36. **J. Leonardis**, P. Rider, J. Aaboe, M. Henriksen, R. Christensen, H. Bliddal, P. DeVita, “Does Quadriceps-Strengthening Exercise Affect Quadriceps Force, Power, and Work During Stair

Ascent in Adults with Knee Osteoarthritis?”, *Proceedings of the 37th Annual Meeting of the American Society of Biomechanics, University of Nebraska-Omaha, Omaha, Nebraska, 2013*

37. **J. Leonardis**, P. Rider, J. Aaboe, M. Henriksen, R. Christensen, H. Bliddal, P. DeVita, “The Effects of Quadriceps Strengthening Exercise on Quadriceps Biomechanics during Stair Ascent in Individuals with Knee Osteoarthritis”, *10th Annual Human Movement Research Symposium, University of North Carolina-Chapel Hill, Chapel Hill, North Carolina, 2013*
38. **J. Leonardis**, M. Hayek, S. Conaty, P. Rider, J. Aaboe, M. Henriksen, R. Christensen, H. Bliddal, P. DeVita, “The Effects of Quadriceps Strengthening Exercise on Quadriceps Muscle Biomechanics in Adults with Knee Osteoarthritis”, *6th Annual Research and Creative Achievement Week, East Carolina University, Greenville, North Carolina, 2012*
39. P. DeVita, P. Rider, T. Hortobagyi, **J. Leonardis**, M. Hayek, S. Conaty, J. Aaboe, M. Henriksen, “Does Quadriceps Strengthening in Knee OA Patients Change Quadriceps Biomechanics During Locomotion?”, *North Carolina Cartilage and Arthritis Research Alliance Meeting, University of North Carolina-Chapel Hill, Chapel Hill, North Carolina, 2012*

ONGOING FUNDING

NIH 1L30HD106365-01

7/2021-6/2023

Role: Principal Investigator

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Quantification of Shoulder Pathology and Manual Wheelchair Propulsion in Children and Adults with Spinal Cord Injury

Purpose: The primary goals of this project are to establish quantitative ultrasound methods for the early identification of shoulder pain and pathology in manual wheelchair users, and to uncover the relationship among age at spinal cord injury onset, wheelchair propulsion biomechanics, shoulder pain, and shoulder pathology.

PENDING FUNDING

NIH 1L30HD106365-02

7/2023-6/2025

Role: Principal Investigator

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Characterizing Sex-Specific Musculoskeletal Adaptations to Wheelchair Use for Pain Prevention Across the Lifespan

Purpose: The primary goals of this project are to quantify sex-related differences in shoulder musculoskeletal morphology in manual wheelchair users and determine the sex-specific roles of shoulder morphology in pain.

NIH 1R03HD114181-01

12/2023-11/2025

Role: Principal Investigator

\$301,304 (Direct + Indirect)

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Quantifying Sex-Specific Musculoskeletal Adaptations to Wheelchair Use in Childhood and Adolescence

Purpose: The primary objectives of this project are to determine the relationships between sex-specific adaptations to glenohumeral and humerothoracic muscle morphology, periarticular scapula shape, scapular kinematics and shoulder pain. Our secondary objective is to identify the sex-specific morphological and biomechanical factors underlying the development of rotator cuff pathologies and glenohumeral instability.

COMPLETED FUNDING

Center for Imaging Research Pilot Award

04/2021-03/2022

Role: Principal Investigator

\$5,000

Medical College of Wisconsin

Title: Exploring Three-Dimensional Scapular Morphology and *In-Vivo* Shoulder Complex Motion in Manual Wheelchair Users with Spinal Cord Injury using 4D MRI

Purpose: The major goals of this project are to determine the influence of age at spinal cord injury onset on three-dimensional shoulder morphology and to explore the use of four-dimensional magnetic resonance imaging for quantifying the independent kinematics of the scapula and humerus during planar motion.

NIH 1R01HD098698-01

5/2016-4/2023

Role: Postdoctoral Fellow, Principal Investigator: Brooke Slavens, PhD

\$2,993,720 (Direct + Indirect)

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Prediction of Shoulder Injury for Disease Prevention in Children and Adults with Spinal Cord Injury Using Advanced Biomechanical Modeling and Diagnostic Imaging

Purpose: The major goals of this project are to investigate the secondary effects of manual wheelchair use in children and adults with spinal cord injury across the lifespan and to identify biomechanical predictors of shoulder pain and pathology.

Rackham Predoctoral Fellowship

05/2019-04/2020

Role: Principal Investigator, Mentor: David Lipps, PhD

\$33,651

University of Michigan - Rackham Graduate School

Title: The Influence of Breast Reconstruction Choice on Functional Shoulder Biomechanics in Women Undergoing Mastectomy for Breast Cancer

Purpose: The objectives of this project were to examine how remaining, intact muscles compensate for the removal of shoulder musculature during breast reconstruction, and to establish the relationships between neuromuscular function and quality of life.

NIH R03HD097704

05/2019-04/2022

Role: Research Assistant, PI: David Lipps, PhD

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Improving the Assessment and Diagnosis of Shoulder Morbidity Following Mastectomy with Breast Reconstruction

Purpose: The overall objectives of this proposal were to use ultrasound shear wave elastography (SWE) to identify post mastectomy breast reconstruction surgeries that significantly impact the pectoralis major, and to determine if these SWE measures could predict post-operative functional deficits.

NOT FUNDED

NIH K99HD110684

11/2022-10/2027

Role: Principal Investigator

\$976,105 (Direct)

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Title: Identifying Sex Specific Morphological and Biomechanical Contributors to Shoulder Pain and Pathology in Manual Wheelchair Users with Pediatric-Onset Disabilities

Purpose: The major aims of this project are to determine the sex specific effects of manual wheelchair use in childhood on the musculoskeletal development of the shoulder, and to identify the sex specific morphological and biomechanical factors underlying the development of shoulder pain and pathology

in adulthood. *Resubmitted as R03HD114181 (above) due to transition to faculty.*

MENTORSHIP

University of Wisconsin-Milwaukee

Caleb Cordes - Ph.D. Program in Health Sciences *2024 (expected)*

University of Michigan

Raina Coffin - B.S Program in Mechanical Engineering *2020*

Cheryl Setlock - B.S Program in Movement Science *2020*

Madison Kulik - B.S Program in Movement Science *2020*

Brian Diefenbach - B.S Program in Movement Science *2018*

David Desmet - B.S Program in Movement Science *2017*

Bhillie Luciani - B.S Program in Movement Science *2017*

SERVICE

Journal Review Service (Alphabetical)

BioMed Central (BMC) Musculoskeletal Disorders *2021-Present*

Clinical Biomechanics *2020-Present*

Disability and Rehabilitation: Assistive Technology *2022-Present*

Journal of Applied Biomechanics *2020-Present*

Journal of Biomechanics *2020-Present*

Journal of Electromyography and Kinesiology *2019-Present*

Journal of Spinal Cord Medicine *2022-Present*

Journal of Strength and Conditioning Research *2019-Present*

Measurement in Physical Education and Exercise Science *2019-Present*

Scientific Reports *2020-Present*

Supportive Care in Cancer *2020-Present*

Topics in Spinal Cord Injury Rehabilitation *2021-Present*

Professional Membership (Alphabetical)

American Congress of Rehabilitation Medicine *2018-Present*

American Society of Biomechanics *2012-Present*

American Spinal Injury Association *2020-Present*

IEEE Engineering in Medicine and Biology Society *2020-Present*

International Society of Biomechanics *2016-Present*

Orthopaedic Research Society *2021-Present*

Steel Assembly *2020-Present*

Professional Conference Service

American Society of Biomechanics
- Annual Meeting Abstract Reviewer *2019-Present*

- Annual Meeting Predoctoral Scientist Award Committee *2021-Present*

- Session Co-Chair (Upper Extremity, Shoulder) *2019, 2020*

International Conference of the IEEE Engineering in Medicine and Biology Society
- Abstract Reviewer *2021-Present*

Outreach

American Society of Biomechanics
- Leadership Committee - Early Career Affinity Group *2022-Present*

COURSES TAUGHT

University of Illinois Urbana-Champaign

KIN 259 - Motor Development and Control - **Instructor**

An overview of motor development across the life span and an introduction to the discipline of motor behavior and control. Students learn the concepts and principles of coordination, the control of movement, and development of skilled action throughout the life span. The course focuses on such topics as the development of fundamental movement activities; movement control processes; acquisition, retention and transfer skill; and the role of constraints to action. (Spring 2023)

University of Wisconsin - Milwaukee

OCCTHPY 593 - Introduction to Biomedical and Rehabilitation Instrumentation - **Co-Instructor**

An introduction to state-of-the-art technologies utilized for rehabilitation and biomedical applications including motion analysis, assistive devices, activity monitors, rehabilitation robotics and quantitative musculoskeletal imaging. Students learn to analyze how biomedical instrumentation can be applied for therapeutic and rehabilitation purposes in individuals with musculoskeletal and neurological pathologies. (Fall 2021)

University of Michigan

MOVESCI 330 - Biomechanics of Human Movement - **Laboratory Instructor**

Apply fundamental biomechanical principles to the musculoskeletal system. Specific topics include musculoskeletal mechanics, tissue mechanics, and the analysis of human movement. (Fall 2015, Winter 2016, Fall 2016, Winter 2019)

Evaluation Questions (1: Strongly Disagree, 5: Strongly Agree):

Q1: Overall, the instructor was an excellent instructor: Score Across All Semesters: 4.7, University Average: 4.5

Q2: Overall, this was an excellent course: Score Across All Semesters: 4.3, University Average: 4.2

Q3: Overall, the instructor maintained an atmosphere of good feeling in class: Score Across All Semesters: 4.9, University Average: 4.7

East Carolina University

KINE 1000 - Lifetime Physical Activity and Fitness - **Instructor**

Investigation of efficiency of human performance through study of variables related to total fitness, physical fitness, diet, weight control, degenerative diseases, physiological effects of exercise, and significance of motor skills development. (Fall 2011, Spring 2012, Fall 2012)

KINE 2000 - Introduction to the Health and Fitness Specialist Profession - **Instructor**

General survey of the methods of study of physical activity. Introduction, justification, terminology, history, methods of study, and professional and academic applications. (Spring 2013)