

MCKENZIE S. WHITE, PhD

Palo Alto, California 94306
(940) 205-7640 | kenziewhite@gmail.com

EDUCATION

- PhD, Movement Science** August 2023
University of Michigan, Ann Arbor, MI
- MS, Biomedical Engineering** February 2018
University at Buffalo, The State University of New York
- BS, Business Administration** May 2016
University at Buffalo, The State University of New York

RESEARCH EXPERIENCE

Postdoctoral Scholar January 2025 – Present
Stanford University, Department of Radiology

- Implement high-performance computing workflows (HPC clusters, GPU acceleration, parallel processing) for large-scale medical image analysis across thousands of MRI scans
- Lead multi-model consensus segmentation generation on the Osteoarthritis Initiative (OAI), evaluating deep learning models across ~46,000 knee MRI scans
- Conduct large-scale analyses of body mass index and lower limb alignment on longitudinal cartilage thinning using OAI data (n=3,016 subjects, n=5,832 limbs)

Strategies in Clinical Research Trainee Officer July 2025 – Present
Orthopedic Research Society

- Serve as trainee representative advancing early-career researcher development in clinical orthopedic research

Postdoctoral Scholar September 2023 – November 2024
University of Kentucky

- Developed automated workflows for musculoskeletal ultrasound collection and processing, including muscle size/quality, patellar tendon length/thickness, and shear wave elastography
- Built collaborations with Bioinformatics and Artificial Intelligence Cores to create fully automated image analysis pipelines for B-mode ultrasound segmentation

Graduate Research Assistant, Kinesiology June 2019 – August 2023
University of Michigan, Ann Arbor, MI

- Developed custom imaging workflows for MRI (T1rho/T2 cartilage mapping, Dixon fat quantification) and ultrasound (fascicle mechanics, trochlea cartilage thickness)
- Implemented diffusion tensor imaging software for quantifying quadriceps muscle architecture
- Managed 20+ undergraduate research assistants; designed project structures, training protocols, and a sustainable lab culture centered on trust, integrity, and teamwork

Graduate Research Assistant, Kinesiology August 2018 – June 2019
University of Connecticut

- Implemented 2D markerless motion capture (DeepLabCut) in an animal lab and developed automated lower extremity gait analysis software

Graduate Research Assistant, Biomedical Engineering

August 2016 – January 2018

University at Buffalo, The State University of New York

- Conducted lower extremity gait analyses using Vicon motion capture systems and Visual3D software

TEACHING EXPERIENCE

Graduate Student Instructor

June 2019 – August 2023

University of Michigan

- Instructed Human Musculoskeletal Anatomy (MOVESCI 230), including lecture preparation, grading rubrics, and assignment design
- Supervised undergraduate students in the Undergraduate Research Opportunity Program

Graduate Teaching Assistant

August 2018 – June 2019

University of Connecticut

- Assisted in Biomechanics of Injury and Sport (KINS 3522)

HONORS AND AWARDS

1. Early Career Investigator Travel Support Award, OARSI (2026)
2. Rackham Graduate Student Research Grant (2021)
3. Zatkoff Family Graduate Fellowship (2021)
4. Invited Participant, DeepLabCut Hackathon (2020)
5. University at Buffalo Athletics 'Unsung Hero' Award (2016)
6. Mid-Atlantic Conference Women's Soccer Champions (2014)
7. University at Buffalo Spectrum Special Issue Award (2013)
8. University at Buffalo Provost Scholarship (2011–2016)
9. NCAA Division I Athletic Scholarship (2011–2016)
10. Dean's List, University at Buffalo (2011–2016)

TECHNICAL SKILLS

Programming: Python, R, MATLAB

Machine Learning & AI: Deep learning for medical image segmentation, neural shape modeling, multi-model consensus methods, convolutional neural networks

High-Performance Computing: HPC cluster management, GPU-accelerated workflows, parallel processing, large-scale batch image analysis

Motion Capture: Vicon, Visual3D, Qualisys, Motion Analysis, OptiTrack, DeepLabCut (markerless), Electromyography

MRI: Dixon fat quantification, Diffusion Tensor Imaging, T1rho/T2 mapping

Ultrasound: B-mode imaging (cartilage, muscle, tendon), Shear Wave Elastography

CT: Human and animal models

Image Analysis: Automated/semi-automated segmentation pipelines, cartilage thickness mapping, muscle quality assessment, adipose tissue quantification, body composition analysis

Musculoskeletal Imaging: Knee cartilage composition mapping, intramuscular fat quantification, muscle architecture analysis, tendon mechanics assessment, bone shape modeling

Software Development: MATLAB application/GUI development, computer vision, open-source tool development, signal processing, automated research workflows

Professional: Project management, team leadership, strategic planning, mentorship

PEER-REVIEWED PUBLICATIONS

Published

1. Harkey MS, Gatti AA, Jansen MP, **White MS**, Tolzman J, Parmar A, Frederick I, Link T, Hart H. Osteoarthritis Year in Review 2025: Imaging. *Osteoarthritis and Cartilage*, 2025.
2. Owen MK, Hardy PA, Damon BM, **White MS**, Thomas NT, Fry CS, Noehren B. Relationships between Diffusion Tensor Parameters and Measures of Skeletal Muscle Fiber Size and Strength After ACL Injury. *Magnetic Resonance Imaging*, 2025.
3. **White MS**, Horikawa-Strakovsky A, Mayer K, Noehren B, Wen Y. Open-Source AI for Vastus Lateralis and Adipose Tissue Segmentation to Assess Muscle Size and Quality. *Ultrasound in Medicine and Biology*, 2025.
4. **White MS**, Garcia SA, Pang Y, Casey CM, Palmieri-Smith RM, Lepley LK. Patellofemoral Cartilage Changes Are Not Associated with Quadriceps Metrics after ACLR with Patellar Tendon Autografts. *Journal of Orthopedic Research*, 2025.
5. Erickson LN, Owen MK, Casadonte KR, Janatova T, Lucas KS, Spencer K, Brightwell BD, Graham MC, **White MS**, Thomas NT, Latham CM, Jacobs CA, Conley CE, Thompson KL, Johnson DL, Hardy PA, Fry CS, Noehren B. The Efficacy of Blood Flow Restriction Training to Improve Quadriceps Muscle Function after ACL Reconstruction. *Medicine & Science in Sports & Exercise*, 2024.
6. Garcia SA, **White MS**, Gallegos J, Balza I, Kahan S, DeFrate LE, Palmieri-Smith RM. Associations between body composition, gait biomechanics and *in vivo* cartilage function after exercise in those with ACL reconstruction. *American Journal of Sports Medicine*, 2024.
7. **White MS**, Graham MC, Janatova T, Hawk GS, Thompson KL, Noehren B. Influence of Sampling Rate and Signal Processing Decisions on Rate of Torque Development and Force Steadiness. *Sensors*, 2024.
8. **White MS**, Ogier AC, Chenevert TL, Zucker E, Stoneback L, Michel CP, Palmieri-Smith RM, Lepley LK. Beyond Weakness: Exploring Intramuscular Fat and Quadriceps Atrophy in ACLR Recovery. *Journal of Orthopedic Research*, 2024.
9. **White MS**, Mancini LM, Stoneback L, Palmieri-Smith RM, Lepley LK. Chronic Adaptions in Quadriceps Fascicle Mechanics Are Related to Altered Knee Biomechanics After ACL Reconstruction. *Journal of Applied Biomechanics*, 2024.
10. Garcia SA, **White MS**, Gallegos J, Balza I, Kahan S, Palmieri-Smith RM. Associations between body composition, walking mechanics and trochlear cartilage thickness in those with ACL reconstruction. *Medicine & Science in Sports & Exercise*, 2024.
11. Stoneback L, Fullano GD, **White MS**, Naaz S, Lepley LK. Development of a low-cost epimysial electromyography electrode: a simplified workflow for fabrication and testing. *Journal of Visualized Experiments*, 2024.
12. **White MS**, Palmieri-Smith RM, Lepley LK. Open-sourced semi-automatic program for ultrasound assessments of femoral trochlea cartilage health. *Computer Methods in Biomechanics and Biomedical Engineering*, 2023.
13. Davi SM, Ahn H, **White MS**, Butterfield TA, Kosmac K, Kwon OS, Lepley LK. Long-lasting impairments in quadriceps mitochondrial health and muscle size and phenotypic composition are present after non-invasive ACL injury. *Frontiers in Physiology*, 2022.
14. **White MS**, Horton ZW, Burland JP, Seeley MK, Lepley LK. The Utility of Functional Data Analyses to Reveal Between-Limbs Asymmetries in Those With a History of ACL Reconstruction. *Journal of Athletic Training*, 2021.
15. **White MS**, Brancati RJ, Lepley LK. Joint Kinematics Dictate Subchondral Bone Remodeling in a Clinically Translational Model of ACL Injury. *Journal of Orthopaedic Research*, 2020.

16. Lepley LK, Davi SM, Hunt ER, Burland JP, **White MS**, McCormick GY, Butterfield TA. Skeletal muscles subjected to eccentrically or concentrically biased exercise exhibit similar morphology with disparate hypertrophic responses. *Journal of Athletic Training*, 2020.
17. Horton WZ, Page G, Reese S, Lepley LK, **White MS**. Template Priors in Bayesian Curve Registration. *Technometrics*, 2020.

In Review

1. Pai A, **White MS**, Black MS, Young KA, Sherman SL, Chu CR, Williams A, Gold GE, Kogan F, Hargreaves BA, Chaudhari AS, Gatti AA. Neural Shape Modeling Reveals Early and Progressive Femoral Bone Shape and Cartilage Thickness Changes After ACL Reconstruction. *Journal of Orthopedic Research*, 2026.

In Preparation

1. **White MS**, Kogan F, Delp SL, Gold GE, Chaudhari AS, Gatti AA. The Combined Effect of BMI and Lower Limb Alignment on Longitudinal Cartilage Thinning: Data from the Osteoarthritis Initiative.
2. **White MS**, Pai A, Barbieri M, Cigdem O, Deniz CM, Gao KT, Padoia V, Majumdar S, Zachow S, Gold GE, Chaudhari AS, Gatti AA. Multi-Model Evaluation on the Osteoarthritis Initiative.

MEDIA INTERVIEWS

1. Dr. Lindsey Lepley and Dr. McKenzie White – Doctor Radio Sports Medicine with Dr. Dennis Cardone, Dr. Guillem Lomas (June 2024)
2. The Long-Term Burden of Oversimplified Data and Diagnoses – A Patient-Researcher Perspective – ACL Study Day, South Coast Seminars (May 2021)
3. Protecting Her Goal – University at Buffalo Athletics (November 2013)

CONFERENCE PRESENTATIONS AND ABSTRACTS

1. Pai A, **White MS**, Gold GE, Kogan F, Chaudhari AS, Gatti AA. MOAKS-based Osteoarthritis Shape Score (MOSS) Enables Improved Prediction of Clinical Outcomes. OARSI. April 2026. West Palm Beach, FL.
2. Gatti AA, Marusich KR, Clouthier A, Ong C, **White MS**, Esrafilian A, Chu C, Sherman S, Gold GE, Delp SL, Kogan F, Chaudhari AS. Shape-Based Alterations in Cartilage Contact Mechanics Precede Radiographic Knee Osteoarthritis. World Congress of Biomechanics. July 2026. Vancouver, CA.
3. Gatti A, **White MS**, Haralabidis N, Pai A, Chu C, Sherman S, Kogan F, Delp SL, Gold GE, Chaudhari AS. Simulated Medial Contact Force Predicts Cartilage Thinning Better Than Static Alignment: An Analysis of 2,629 OAI Subjects. World Congress of Biomechanics. July 2026. Vancouver, CA.
4. Velez-Gonzalez S, Keeble AR, Owen AM, Wohlgemuth RP, Thomas NT, Dobis MJ, Thompson HN, **White MS**, Johnson DL, Stone AV, Wen Y, Noehren B, Fry CS. Dynamic Fibro-adipogenic Progenitor States Contribute to Loss of Muscle Quality After Injury in Humans. American Physiology Society. April 2026. Minneapolis, MN.
5. **White MS**, Kogan F, Delp SL, Gold GE, Chaudhari AS, Gatti AA. Varus Alignment and BMI Jointly Accelerate Medial Femoral Cartilage Thinning: Data from the Osteoarthritis Initiative. OARSI. April 2026. West Palm Beach, FL.
6. Goyal A, Belibi F, Watkins L, Vainberg Y, Shalit R, **White MS**, Gatti AA, Kogan F. Multi-tissue Fat Profiles In Knee Aging and Osteoarthritis. OARSI. April 2026. West Palm Beach, FL.
7. Pai A, **White MS**, Black M, Young K, Sherman S, Chu C, Williams A, Gold GE, Kogan F, Hargreaves B, Chaudhari AS, Gatti AA. Neural Shape Model-Based Score Outperforms Conventional Measures in Quantifying Early and Progressive Joint Remodeling in ACL Reconstructed Knees. OARSI. April 2026. West Palm Beach, FL.

8. **White MS**, Pai A, Gao KT, Pedoia V, Majumdar S, Gold GE, Chaudhari AS, Gatti AA. Greater Longitudinal Sensitivity to Cartilage Thinning via Deep Learning on the OAI. ORS. March 2026. Charlotte, NC.
9. Pai A, **White MS**, Black M, Young K, Williams A, Sherman S, Chu C, Gold GE, Kogan F, Hargreaves B, Chaudhari AS, Gatti AA. Early Peripheral Osteophyte Lipping Drives Early Femoral Bone Surface Growth Following ACL Reconstruction. ORS. March 2026. Charlotte, NC.
10. Belibi F, Vainberg Y, **White MS**, Gatti AA, Gold GE, Kogan F, Goyal A. Sex-Specific Alterations in Thigh Muscle Quality in Individuals with Knee Osteoarthritis. ISMRM. May 2026. Cape Town, South Africa.
11. Goyal A, Belibi F, Vainberg Y, Shalit R, **White MS**, Gatti AA, Kogan F. Quantitative PET-MRI Imaging Reveals Altered Bone-Muscle Coupling Across Age, Sex, and BMI. ORS. March 2026. Charlotte, NC.
12. **White MS**, Gao KT, Pedoia V, Majumdar S, Gold GE, Chaudhari AS, Gatti AA. Toward Openly Available Knee MRI Segmentations for the OAI: Multi-Model Evaluation and Consensus Generation on 9,360 Scans. International Workshop on Osteoarthritis Imaging. July 2025. Cambridge, UK.
13. Goyal A, Vainberg Y, Gatti AA, **White MS**, Shalit R, Kogan F. The Aging Joint: Quantitative [18F]NaF PET-MRI of Bone-Cartilage-Muscle Relationships Across the Lifespan. International Workshop on Osteoarthritis Imaging. July 2025. Cambridge, UK.
14. Rubin E, **White MS**, Noel E, Gold GE, Kogan F, Goyal A. Comparison of Femoral Neck PET Uptake and MRI Fat Fraction in Pre- and Post-Menopausal Women. ISMRM. May 2025. Honolulu, HI.
15. Belibi F, **White MS**, Vainberg Y, Gold GE, Kogan F, Goyal A. Exploratory Investigation on Bone-Muscle-Cartilage Relationships in Knee Osteoarthritis. ISMRM. May 2025. Honolulu, HI.
16. **White MS**, Palmieri-Smith RM, Lepley LK. Quadriceps Atrophy Without Hamstrings Adaptations in Individuals following ACLR via Patellar Tendon Autograft. American Society of Biomechanics. August 2025. Pittsburgh, PA.
17. **White MS**, Owen MK, Schmitz CB, Conley CE, Stone AV, Hardy PA, Noehren B. Differences in Vastus Lateralis Muscle Architecture in Individuals with a Patellar Dislocation. ORS. February 2025. Phoenix, AZ.
18. *Horikawa-Strakovsky A, ***White MS**, Arenas Florez MN, Jones L, Noehren B, Wen Y. Automatic segmentation for measuring vastus lateralis muscle quality and size from B-mode ultrasound. ORS. February 2025. Phoenix, AZ. *Denotes co-first author.
19. Cardon JL, Noehren B, **White MS**. Influence of Region of Interest Size on Vastus Lateralis Shear Wave Velocity in Individuals with ACL Reconstruction. ACSM Southwest Chapter. October 2024. Irvine, CA.
20. Garcia SA, **White MS**, Palmieri-Smith RM. Between Limb Differences in Gait Complexity and Associations with Cartilage Deformation in Individuals with ACL Reconstruction. American Society of Biomechanics. August 2024. Madison, WI.
21. Janatova T, Noehren B, **White MS**. Associations between patella tendon and vastus lateralis shear-wave velocity, walking mechanics, and quadriceps strength after ACL reconstruction. American Society of Biomechanics. August 2024. Madison, WI.
22. **White MS**, Garcia SA, Pang Y, Casey CM, Palmieri-Smith RM, Lepley LK. Alterations in Patellofemoral Cartilage Composition are not Associated with Quadriceps Size and Strength following ACL Reconstruction. American Society of Biomechanics. August 2024. Madison, WI.
23. Garcia SA, **White MS**, Palmieri-Smith RM. Associations Between Sagittal Plane Knee Complexity and Exercise-Induced Changes in Cartilage Thickness and Echogenicity in individuals with ACL Reconstruction. Osteoarthritis and Cartilage. April 2024. Vienna, Austria.
24. Graham MC, Janatova T, **White MS**, Reeves KA, Noehren B. Words Matter! The Effects of Instruction on Quadriceps Rate of Torque Development after ACL Reconstruction. ACSM. May 2024. Boston, MA.

25. **White MS**, Owen MK, Fry CS, Hardy PA, Noehren B. Intramuscular Fat Negatively Impacts Quadriceps Function in Individuals with Knee Osteoarthritis. ACSM. May 2024. Boston, MA.
26. **White MS**, Ogier AC, Chenevert LC, Zucker E, Stoneback L, Michel CP, Palmieri-Smith RM, Lepley LK. Intramuscular Fat Infiltration Following ACL Reconstruction. ORS. February 2024. Long Beach, CA.
27. **White MS**, Mancini LM, Stoneback L, Palmieri-Smith RM, Lepley LK. Chronic Adaptions In Quadricep Fascicle Mechanics Are Related To The Magnitude And Rate of Joint Loading After ACL Reconstruction. ORS. February 2024. Long Beach, CA.
28. Garcia SA, **White MS**, Kahan S, Gallegos J, Balza I, Palmieri-Smith RM. Body Mass Index and Walking Biomechanics Predict Trochlear Cartilage Strain in Individuals with ACL Reconstruction. American Society of Biomechanics. August 2023. Knoxville, TN.
29. Gallegos J, Balza I, Garcia SA, Palmieri-Smith RM, **White MS**, Kahan S. Sex Differences in Walking Biomechanics and Femoral Cartilage Properties in those with ACL Reconstruction. American Society of Biomechanics. August 2023. Knoxville, TN.
30. Balza I, Gallegos J, Garcia SA, Kahan S, **White MS**, Palmieri-Smith RM. Differences in Walking Biomechanics and Cartilage Function During Sloped and Level Walking in Persons with ACL Reconstruction. American Society of Biomechanics. August 2023. Knoxville, TN.
31. Stoneback L, Fullano GD, **White MS**, Naaz S, Lepley LK. Development of a Low-Cost Biocompatible EMG electrode: Sensitivity, Reliability, and Instructions for Fabrication. American Society of Biomechanics. August 2023. Knoxville, TN.
32. Garcia SA, **White MS**, Kahan S, Balza I, Gallegos J, Palmieri-Smith RM. Ultrasonographic Assessments of Trochlear Cartilage Before and After Incline Walking in Persons with ACL Reconstruction. ACSM. June 2023. Denver, CO.
33. **White MS**, Palmieri-Smith RM, Lepley LK. Open-sourced Semi-automatic Program for Ultrasound Assessments of Femoral Trochlea Cartilage Thickness. ACL Retreat IX. March 2022. High Point, NC.
34. **White MS**, Casey CM, Lepley LK. Open-sourced Semi-automatic Program to Standardize and Expand Clinically Accessible Ultrasound Assessments of Patellofemoral Cartilage Health. ORS. February 2022. Tampa, FL.
35. **White MS**, Davi SM, Brancati RJ, Lepley LK. Alterations in gait and knee joint alignment substantiate new PTOA rodent model of ACL injury. ORS. February 2020. Phoenix, AZ.
36. **White MS**, Burland JP, Davi SM, Lepley AS, Lepley LK. Hidden Asymmetries in ACLR Patients Who Pass Triple Hop Test Following ACLR. ACL Research Retreat VIII. March 2019. Greensboro, NC.
37. Lepley LK, **White MS**, Davi SM, Brancati RJ. Novel pre-clinical model of post-traumatic osteoarthritis demonstrates unicompartmental declines in trabecular bone volume. ORS. February 2020. Phoenix, AZ. Preclinical Model Section Award Finalist.
38. Davi SM, **White MS**, Kwon OS, Lepley LK. The Role of Mitochondrial Dysfunction and Redox Disturbances After Non-Invasive ACL Injury. ACSM. June 2020.
39. Davi SM, **White MS**, Kwon OS, Lepley LK. Preclinical Model of ACL Injury Reveals the Acute Time Course of Mitochondrial Dysfunction in the Vastus Lateralis. NATA. July 2020. Virtual.
40. Kwon OS, Davi SM, **White MS**, Lepley LK. The Role of Mitochondrial-derived Reactive Oxygen Species in Non-Invasive ACL Injury. Experimental Biology. April 2020. Conference cancelled due to COVID-19.