Exponent®
Engineering & Scientific Consulting

Megan Co, Ph.D.

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Professional Profile

Dr. Co is a biomechanics consultant with a research background in orthopedic biomechanics, specializing in the analysis of injury mechanisms associated with the spine. Her research experience includes medical imaging, participant studies, image processing, and mechanical testing of orthopedic tissues. Her academic training in biomedical and mechanical engineering directly applies to the investigation of injuries resulting from incidents such as motor vehicle accidents and slip and fall incidents.

Prior to joining Exponent, Dr. Co was a Graduate Research Assistant in the Multiscale Mechanobiology & Diagnostic Biomechanics Lab at The Ohio State University. Her research focused on developing magnetic resonance imaging (MRI) techniques to assess intervertebral disc (IVD) mechanics and to inform diagnostic frameworks for low back pain. Her work included the scanning of human participants, while ensuring IRB compliance, and MRI image analysis via MATLAB to non-invasively quantify compositional and mechanical metrics. She also has extensive experience performing compressive/torsional mechanical tests on ex-vivo tissue via materials testing systems and interpreting the data in the context of constitutive models to further inform IVD mechanics and degeneration.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Ohio State University, 2023

M.S., Biomedical Engineering, Ohio State University, 2021

B.S., Mechanical Engineering, Oregon State University, 2018

OSU Career Development Grant, 2023

ORS PSRS Best Podium Award for Outstanding Scientific Research in the Biomechanics and Imaging Category, 2022

OSU Ray Travel Award, 2022

OSU Fellowship Award, 2018-2019

Prior Experience

Graduate Research Associate, The Ohio State University, 2018-2023

Summer Research Intern, Oregon Health and Science University, 2017

Professional Affiliations

International Society for Magnetic Resonance in Medicine, Member

Orthopaedic Research Society, Member

Biomedical Engineering Society, Member

Publications

M. Co, B. Raterman, B. Klamer, A. Kolipaka, B.A. Walter (2024), “Nucleus Pulposus Structure and Function Assessed in Shear Using Magnetic Resonance Elastography, Quantitative MRI, and Rheometry,” JOR Spine 7(2): e1335.

D. Agustini, M.K. Heimann, M. Co, B.A. Walter, D. Purmessur, S.A. Moore (2024), “Modic Changes in the Lumbar Vertebral Column of Chondrodystrophic and Non-chondrodystrophic Dogs with Intervertebral Disc Disease,” Frontiers in Veterinary Science, 11.

M. Co, C. Pack, Z. Osborn-King, B. Raterman, A. Kolipaka, S.A. Bentil, B. Walter (2024). “Modeling the Effects of Hydration on Viscoelastic Properties of Nucleus Pulposus Tissue in Shear using the Fractional Zener Model,” Journal of Biomechanics 164: 111965.

M. Co, H. Dong, D.J. Boulter, X.V. Nguyen, S.N. Khan, B. Raterman, B. Klamer, A. Kolipaka, B.A. Walter,” Magnetic Resonance Elastography of Intervertebral Discs: Spin-Echo Echo-Planar Imaging Sequence Validation,” Journal of Magnetic Resonance Imaging 56(6): 1722-1732.

M. Lindsay, S. Sengupta, K. Bishop, M. Co, C. Chen, M. Cumbie, M.L. Johnston (2018), “Heterogeneous Integration of CMOS Sensors and Fluidic Networks Using Wafer-Level Molding,” IEEE Transactions on Biomedical Circuits and Systems,12(5): 1046-1055.

Presentations

Z. Osborn-King, M. Co, B. Raterman, T. Weaver, N. Hussain, A. Kolipaka, B.A. Walter, “MRE-Derived Stiffness Measurements of Painful and Non-Painful Discs from Low Back Pain Patients,” ORS PSRS 7th International Spine Research Symposium, Nov 2024. Poster.

M. Co, B. Raterman, B. Klamer, A. Kolipaka, B. Walter, “Structure-function of the Intervertebral Disc Assessed via MR Elastography, Quantitative MRI, and Rheometry,” ORS Annual Meeting, Feb 2024. Podium.

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Rheological Validation of Magnetic Resonance Elastography-Derived Intervertebral Disc Shear Properties,” BMES Annual Meeting, Oct 2023. Poster.

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Effects of Nucleus Pulposus Tissue Hydration on T1ρ and T2 Relaxation Times and Mechanical Properties,” ISMRM Annual Meeting, Jun 2023. Digital Poster.

M. Co, K. Ding, Z. Osborn, C. Pack, S. Bentil, B. Walter, “Modeling the Effects of Hydration on Viscoelastic Properties of Nucleus Pulposus Tissue in Shear and Compression using the Fractional Zener Model,” ORS Annual Meeting, Feb 2023. Poster

M. Co, K. Ding, Z. Osborn, C. Pack, S. Bentil, B. Walter, “Modeling the Effects of Hydration on Viscoelastic Properties of Nucleus Pulposus Tissue in Shear and Compression using the Fractional Zener Model,” ORS PSRS 6th International Spine Research Symposium, Nov 2022. Podium.

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Effects of Hydration of Nucleus Pulposus Tissue on T1ρ and T2 Relaxation Times and Mechanical Properties,” ORS PSRS 6th International Spine Research

Symposium, Nov 2022. Poster.

M. Co, H. Dong, D.J. Boulter, X.V. Nguyen, S.N. Khan, B. Raterman, B. Klamer, A. Kolipaka, B.A. Walter, ”Spin Echo-Echo Planar Imaging Sequence Validation for MR Elastography of Intervertebral Discs,” ISMRM Annual Meeting, May 2022. Podium

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Effects of Nucleus Pulposus and Annulus Fibrosus Tissue Hydration on T1p and T2 Relaxation Times and Mechanical Properties,” Hayes Graduate Research Forum, Mar 2022. Poster.

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Effects of Nucleus Pulposus and Annulus Fibrosus Tissue Hydration on T1p and T2 Relaxation Times and Mechanical Properties,” ORS Annual Meeting, Feb 2022. Poster.

M. Co, J. Marshall, S. Pillai, B. Walter, “Determination of the Hydraulic Permeability of Nucleus Pulposus Tissue via Osmotic Permeation,” BMES Annual Meeting, Oct 2021. Podium.

M. Co, B. Raterman, A. Kolipaka, B. Walter, “Assessment of Lumbar Paraspinal Muscle Fat Infiltration and Material Properties using Magnetic Resonance Imaging,” ORS Annual Meeting, Feb 2021. Poster.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “MR Elastography of the Intervertebral Disc: 3D Spin-Echo Echo-Planar Imaging Sequence Validation,” BMES Annual Meeting, Oct 2020. Podium.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “Validation of a 3D Spin-Echo Echo-Planar Imaging Sequence for MR Elastography of the Intervertebral Disc,” Engineering in Healthcare: Industry and Research Symposium, Feb 2020. Poster.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “Validation of a 3D Spin-Echo Echo-Planar Imaging Sequence for MR Elastography of the Intervertebral Disc,” ORS Annual Meeting, Feb 2020. Poster.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “Validation of a 3D Spin-Echo Echo-Planar Imaging Sequence for MR Elastography of the Intervertebral Disc,” Hayes Graduate Research Forum, Jan 2020. Poster.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “Validation of a 3D Spin-Echo Echo-Planar Imaging Sequence for MR Elastography of the Intervertebral Disc,” ORS PSRS 5th International Spine Research Symposium, Nov 2019. Poster.

M. Co, H. Dong, P. Karla, B. Raterman, A. Kolipaka, B. Walter, “Validation of a 3D Spin-Echo Echo-Planar Imaging Sequence for MR Elastography of the Intervertebral Disc,” DHLRI Research Day, Oct 2019. Poster.

K. Bishop, M. Co, M. Johnston. “Rapid Prototyping of 3D Microfluidics Using Low-cost Materials and Maker Tools,” BMES Annual Meeting, Oct 2017. Poster.