EMILY K. BLIVEN

Specialized Professional Competence

Biomechanics of human injury mechanism, causation, and tolerance. Impact and kinematic analysis. Computer simulation and analysis of falls and skeletal fracture. Orthopedic biomechanical testing. Experimental testing design, data acquisition, and analysis. Orthopedic device testing and analysis.

Background and Professional Honors

B.S. (Mechanical Engineering), University of Portland
M.Eng. (Biomedical Engineering), University of Portland
Ph.D. (Biomedical Engineering), University of British Columbia, Canada

Engineer,
Talas Engineering, Inc.
Graduate Student Researcher,
Orthopaedic and Injury Biomechanics Group, University of British Columbia, Canada
Research Engineer,
Institute for Biomechanics, Murnau Trauma Center, Germany
Development Engineer,
Apex Biomedical, LLC
Adjunct Instructor,
Department of Mechanical Engineering, University of Portland
Research Assistant,
Department of Orthopaedics and Rehabilitation, Oregon Health & Science University

Registered Professional Mechanical Engineer, California, #43451

Professional Activities & Memberships

Board Member, Biomedical Engineering Technology Aid International
Reviewer, Annals of Biomedical Engineering
Reviewer, Heliyon

Awards

Best PhD Presentation (Research Showcase, Centre for Aging SMART, 2023)
Friedman Award for Scholars in Health (Faculty of Medicine, University of British Columbia, 2021)
Moreau Fellowship (University of Portland, 2016)
Student Choice Award – Poster Presentation (Institute of Biological Engineering Annual Meeting, 2016)

Student of the Year (Biomedical Engineering Society, University of Portland, 2015)

Selected Publications and Presentations

"Slopes, Spirals, and Splashes: Rider Biomechanics on Three Common Recreational Water Slides and Rides," 10th World Congress of Biomechanics, Vancouver, Canada, July 2026 (with N. Schneider and E. Serina).

"High-speed x-ray characterizes fracture incidence and bone-implant motion during a fall from standing," *Clinical Biomechanics*, 2025 (with P. Guy, A. Baker, A. Fung, B. Helgason, and P.A. Cripton).

"Can an Intramedullary Nail Be Used for Hip Fracture Prevention in a Sideways Fall Scenario?" *SAE International Journal of Transportation Safety*, 2024 (with A. Fung, A. Baker, B. Helgason, P. Guy, and P.A. Cripton).

"How accurately do finite element models predict the fall impact response of ex vivo specimens augmented by prophylactic intramedullary nailing?" *Journal of Orthopaedic Research*, 2024 (with A. Fung, A. Baker, I. Fleps, S.J. Ferguson, P. Guy, B. Helgason, and P. Cripton).

"Orthopaedic implants for preventing hip fracture in a fall: a biomechanical investigation," *Ph.D. dissertation*, School of Biomedical Engineering, University of British Columbia, Canada, 2024.

"Evaluating femoral augmentation to prevent geriatric hip fracture: A scoping review of experimental methods," *Journal of Orthopaedic Research*, 2023 (with A. Fung, P.A. Cripton, B. Helgason, and P. Guy).

"Non-Linear Response of a Post-Mortem Human Subject Pelvis During a Sideways Fall Impact: A Biomechanical Case Study," International Research Council on Biomechanics of Injury Conference, Cambridge, United Kingdom, September 2023 (with A. Fung, A. Baker, B. Helgason, P. Guy, and P. Cripton).

"Assessing the Accuracy of Biplanar High-Speed X-Ray to Capture Subsurface Implant and Bone Kinematics During a Sideways Fall Impact," International Research Council on Biomechanics of Injury Conference, Cambridge, United Kingdom, September 2023 (with A. Fung, A. Baker, A. Fung, B. Helgason, P. Guy, and P. Cripton).

"Use of High-Speed X-Ray to Document Bone-Implant Motion and Fracture During a Post-Mortem Human Subject Fall Impact," International Research Council on Biomechanics of Injury Conference, Porto, Portugal, September 2022 (with A. Fung, J. Levine, I. Fleps, B. Helgason, P. Guy, and P. Cripton).

"Hip fracture: biomechanics, orthopedics, and prevention," Invited Lecture, Department of Bioengineering, Santa Clara University, virtual, January 2022.

"Biomechanical evaluation of locked plating fixation for unstable femoral neck fractures," *Bone & Joint Research*, 6(9), 2020 (with S. Sandriesser, P. Augat, C. von Rüden, and S. Hackl).

"Biomechanics of Osteoporotic Fracture Fixation," *Current Osteoporosis Reports*, 2019 (with M. Hollensteiner, S. Sandriesser, C. von Rüden, and P. Augat.)

"Biomechanics of Femoral Neck Fractures and Implications for Fixation," *Journal of Orthopaedic Trauma,* 2019 (with P. Augat and S. Hackl.)

"External fixation of the lower extremities: Biomechanical perspective and recent innovations," *Injury*, 2019 (with M. Greinwald, S. Hackl, and P. Augat).

"Evaluation of a novel bicycle helmet concept in oblique impact testing," *Accident Analysis & Prevention*, 2019 (with A Rouhier, R Willinger, N Bourdet, C. Deck, S.M. Madey, and M. Bottlang).

"A Novel Strategy for Mitigation of Oblique Impacts in Bicycle Helmets," *Journal of Forensic Biomechanics*, 2019 (with A. Rouhier, S. Tsai, R. Willinger, N. Bourdet, C. Deck, S.M. Madey, and M. Bottlang).

"Dynamic Stabilization of Simple Fractures With Active Plates Delivers Stronger Healing Than Conventional Compression Plating." *Journal of Orthopaedic Trauma,* 2017 (with M. Bottlang, S. Tsai, B. von Rechenberg, P. Kindt, P. Augat, J. Henschel, D.C. Fitzpatrick, and S.M. Madey.)

"Dynamic Stabilization with Active Locking Plates Delivers Faster, Stronger, and More Symmetric Fracture-Healing." *Journal of Bone and Joint Surgery*, 2016 (with M. Bottlang, S. Tsai, B. von Rechenberg, K. Klein, P. Augat, J. Henschel, D.C. Fitzpatrick, and S.M. Madey.)