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Devin Needs, Ph.D.

Project Engineer

Professional Specialization

- Biomechanical investigation, reconstruction, and failure analysis for a variety of situations and environments
- Analysis of human kinematics, injury potential, and injury mechanisms in traumatic events
- Evaluation of accident and injury data
- Surrogate/exemplar testing and analysis

Education

Ph.D.in Mechanical Engineering, Brigham Young University, 2024

Dissertation: "Mathematical Modeling and Understanding the Physiological Mechanisms of Vibration on Wound Healing and Scar Remodeling"

B.S.in Mechanical Engineering, Brigham Young University, 2017

Professional Experience

Design Research Engineering, Project Engineer, September 2025 – present

Carr Engineering, Inc., Senior Engineer, July 2024 – August 2025

ICU Medical, Product Development Engineer I, October 2018 – March 2019

Brigham Young University, January 2019 – April 2024

Research Assistant, Vibration and Acoustics Lab

Research Assistant, Exercise Physiology Lab

Professional Affiliations

Member - Society of Automotive Engineers

Member - Biomedical Engineering Society

Publications and Presentations

Needs, D; Blotter, J; Fellingham, GW; Cruse, G; Gifford, JR; Johnson, AW; Feland, JB;
"Antihistamine Medication Blunts Localized-Vibration-Induced Increases in Popliteal Blood Flow"; *Vibration*, March 2024, 7, 351-361.

Needs, Devin Rion, "Mathematical Modeling and Understanding the Physiological Mechanisms of Vibration on Wound Healing and Scar Remodeling" (2024). *Theses and Dissertations*. 10870. <<https://scholarsarchive.byu.edu/etd/10870>>.

Needs, D; Blotter, J; Dallon, JC; Feland JB; "Development of Mathematical Model for Vibration Accelerated Wound Healing"; *Journal of Biostatistics and Biometric Applications*, 2022 Vol7, Issue1: 101.

Needs, D; Blotter, J; Cowan M; Fellingham, G; Johnson, AW; Feland, JB; "Effect of Localized Vibration Massage on Popliteal Blood Flow"; *Journal of Clinical Medicine*, 2023 Mar 4;12(5).

Needs, D; "Development of Mathematical Model for Vibration Accelerated Wound Healing", Presentation, Biomedical Engineering Society Annual Meeting, October 2022.