Zane Colvin, Ph.D.

Staff Consultant

Dr. Zane Colvin is a Staff Consultant at Engineering Systems Inc. (ESi) where he works as part of the Biomechanics and Safety group. Dr. Colvin has over 5 years of laboratory research experience investigating how able bodied and people with lower limb disability interact with devices in their everyday life and sport through use of research tools including surface electromyography, metabolic rate testing, motion capture systems, instrumented treadmills, and materials testing machines. At ESi, Dr. Colvin applies his expertise to a range of investigative scenarios including motor vehicle accidents, slips, trips, and falls, injury causation, safety analyses, and consumer product and premises liability claims.

Before joining ESi, Dr. Colvin earned his Ph.D. in Integrative Physiology at the University of Colorado Boulder, conducting research in the Applied Biomechanics Lab. For his dissertation research, Dr. Colvin investigated the effects of device configuration on the biomechanics and physiology of people with lower limb disability during walking and skating. Dr. Colvin has presented his research at national and international conferences and is published in peer-reviewed scientific journals and conference proceedings, including the *Journal of the Royal Society Open Science.*

Positions Held

University of Colorado – Boulder, CO

- Graduate Research Assistant, 2019-2024
- Clinical Joint Strength Consultant, 2021 – 2024
- Lead Graduate Teaching Assistant, 2023 – 2024

CU Sports Medicine and Performance Center – Boulder, CO

- Sport Physiologist, 2017 – 2019

Peak Physical Therapy and Wellness – Englewood, CO

- Exercise Physiologist, 2016 – 2017

Professional Memberships

American Society of Biomechanics

- Member, 2020-2024

Zane Colvin
Staff Consultant

Email: zcolvin@engsys.com
Phone: 720-617-8159

ESi Denver
7265 South Revere Parkway
Suite 903
Centennial, CO 80112

Education

Ph.D., Integrative Physiology, Biomechanics
University of Colorado Boulder, 2024

M.S., Integrative Physiology, Biomechanics
University of Colorado Boulder, 2021

B.A., Integrative Physiology
University of Colorado Boulder, 2019

Areas of Specialization

Biomechanical Engineering
Life Sciences
Sports and Fitness Equipment
Gait Biomechanics
Slip/Trip and Falls
Surface Electromyography (EMG)
Prosthetics and Orthotics
Materials Testing
Experimental Testing
Statistical Analysis

Publications

Colvin ZA., Montgomery JR. and Grabowski AM. Effects of powered versus passive-elastic ankle foot prostheses on leg muscle activity during level, uphill and downhill walking. 2022 *R. Soc. Open Sci.***9:** 220651. http://doi.org/10.1098/rsos.220651

Tacca JR, **Colvin ZA**, Grabowski AM. Greater than recommended stiffness and power setting of a stance-phase powered leg prosthesis can improve step-to-step transition work and effective foot length ratio during walking in people with transtibial amputation. *Front Bioeng Biotechnol*. 2024;(July):1-16. https://doi.org/10.3389/fbioe.2024.1336520

Tacca JR, **Colvin ZA**, Grabowski AM. Low-profile prosthetic foot stiffness category and size, and shoes affect axial and torsional stiffness and hysteresis. *Front Rehabil Sci*. 2024;5(February):114. https://doi.org/10.3389/fresc.2024.1290092

Academic Conference Presentations

Colvin ZA, Grabowski, AM Leg muscle activation using a powered or passive ankle foot prosthesis during level and sloped walking. 2020, Poster presented at the American Society of Biomechanics Conference, Virtual.

Colvin ZA, Tacca JR, Grabowski, AM. Optimized stiffness and power of an ankle-foot prosthesis may reduce metabolic power during walking. 2021, Poster presented at the American Society of Biomechanics Conference, Virtual.

Colvin ZA, Tacca JR, Grabowski, AM. Is leg muscle strength correlated with metabolic power in people with unilateral transtibial amputation? 2022, Podium presented at the Rocky Mountain American Society of Biomechanics.

Colvin ZA, Tacca JR, Grabowski, AM. Is leg muscle strength correlated with metabolic power in people with unilateral transtibial amputation? 2022 Poster presented at the North American Congress on Biomechanics Conference.

Colvin ZA, Tacca JR, Grobowski, AM. The effects of stiffness and power of an ankle-foot prosthesis on metabolic power during walking. 2023, Poster presented at the Veterans Affairs Research Day Poster Competition.