

Curriculum Vitae

Adrienne Henderson

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EDUCATION

- Philosopher of Science** University of Delaware, Newark, Delaware
May 2024
Program: Kinesiology and Applied Physiology
Advisor: Elisa S. Arch, PhD
Dissertation: Exploring shod foot energetics: a novel measurement technique and its applications
- Master of Science** Brigham Young University, Provo, Utah
August 2018
Major: Exercise Sciences
Advisor: Dustin A. Bruening, PhD
Thesis: Gait alterations and plantar pressure in diabetic peripheral Neuropathy
- Bachelor of Science** Brigham Young University, Provo, Utah
August 2016
Major: Exercise Sciences

PROFESSIONAL EMPLOYMENT

- Assistant Professor** Brigham Young University, Provo, Utah
June 2024 – Present
Department of Exercise Sciences
College of Life Sciences

PUBLICATIONS

1. **Henderson, A**; Hulcher, T; Koller, C; Bruening, D; Arch, E. “Deformable Foot Orthoses Redistribute Power from the Ankle to the Distal Foot During Walking.” *Journal of Biomechanics*, August 2021. <https://doi.org/10.1016/j.jbiomech.2021.110728>.
2. **Henderson, AD**; Johnson, AW; Rasmussen, LG; Peine, WP; Symons, SH; Scoresby, KA; Ridge, ST; Bruening, DA. “Early stage diabetic neuropathy reduces foot strength and intrinsic but not extrinsic foot muscles size.” *Journal of Diabetes Research*, March 2020. <https://doi.org/10.1155/2020/9536362>.
3. **Henderson, AD**; Johnson, AW; Ridge, ST; Egbert, JS; Curtis, KP; Berry, LJ; Bruening, DA. “Diabetic Gait is Not Just Slow Gait: Gait Compensations in Diabetic Neuropathy.” *Journal of Diabetes Research*, November 2019, 12(1):1-9. [doi: 10.1155/2019/4512501](https://doi.org/10.1155/2019/4512501).

RESEARCH PROJECTS IN PROGRESS

1. **Henderson, A**; Hafer, J; Crenshaw, J; Bruening, D; Arch, E. The Energetic Role of the Ankle and Foot Joints are Exaggerated when Walking Faster.

2. **Henderson, A;** Hafer, J; Crenshaw, J; Bruening, D; Arch, E. Using Pressure-Sensing Insoles to Characterize Multi-Segment Foot Energetics While Walking While Walking in Athletic Shoes.
3. **Henderson, A;** Hafer, J; Crenshaw, J; Bruening, D; Arch, E. The Energetic Effect of Footwear on Multiple Segments of the Foot.
4. **Henderson, A;** Weaver, K; Bruening, D. Gait Changes vs. Tissue Changes in Diabetic Plantar Pressure.

PODIUM PRESENTATIONS

1. *American Society of Biomechanics. Knoxville, TN, USA. **Adrienne Henderson,** Lauren Williams, Dustin Bruening, Elisa Arch (2023) Foot Power Decreases with Restricted First Metatarsophalangeal Joint Range of Motion.*
2. *American Society of Biomechanics, East Coast Conference. Reading, PA, USA. **Adrienne Henderson,** Lauren Williams, Dustin Bruening, Elisa Arch (2023) Foot Power Decreases with Restricted First Metatarsophalangeal Joint Range of Motion.*
3. *University of Utah, Biomechanics Seminar. Virtual. **Adrienne Henderson** (2022) Don't Forget the Foot!*
4. *University of Delaware, College of Health Science Research Day. Newark, DE, USA. **Adrienne Henderson,** Elisa Arch (2022) An Exploratory Study of Carbon Fiber Foot Orthoses' Effect on Functional Tasks of Gait.*
5. *American Society of Biomechanics, East Coast Conference. Virtual. **Adrienne Henderson,** Thomas Hulcher, Dustin Bruening, Elisa Arch (2020) Modulating Distal Foot Energetics Using a Customized Deformable Foot Orthosis.*
6. *International Foot and Ankle Biomechanics. New York City, NY, USA. **Adrienne Henderson,** Dustin Bruening, Sarah Ridge. (2018) Midfoot Angle Changes During Running After an 8-Week Intervention Program.*

POSTER PRESENTATIONS

1. *North American Congress on Biomechanics/ American Society of Biomechanics. Ottawa, Ont, CA.
Adrienne Henderson, Thomas Hulcher, Dustin Bruening, Elisa Arch (2022) An Exploratory Study of Carbon Fiber Foot Orthoses' Effect on Functional Tasks of Gait.*
2. *University of Delaware, College of Health Science Research Day. Newark, DE, USA.
Adrienne Henderson, Elisa Arch (2022) An Exploratory Study of Carbon Fiber Foot Orthoses' Effect on Functional Tasks of Gait.*
3. *American Society of Biomechanics. Virtual meeting.
Adrienne Henderson, Jonathan Egbert, Dustin Bruening (2021) Gait Changes vs. Tissue Changes in Diabetic Plantar Pressure.*
4. *American Society of Biomechanics. Virtual meeting.
Adrienne Henderson, Thomas Hulcher, Dustin Bruening, Elisa Arch. (2020) Modulating Distal Foot Energetics Using A Deformable Foot Orthosis.*
5. *Southwest Chapter of American College of Sports Medicine. Long Beach, CA, USA.
Adrienne Henderson, Wayne Johnson, Sarah Ridge, Dustin Bruening. (2017) Arch Height and Foot Strength.*
6. *Utah Physical Therapy Association, Salt Lake City, UT, USA.
Adrienne Henderson, Joaquin Barrios, Dustin Bruening. (2017) Arch Structure and Loading Pattern May Predict Running Foot Mechanics.*
7. *American Society of Biomechanics. Boulder, CO, USA.*

- Adrienne Henderson, Joaquin Barrios, Dustin Bruening. (2017) Arch Structure and Loading Pattern May Predict Running Foot Mechanics.
8. *American College of Sports Medicine. Denver, CO, USA.*
Victoria Violette, Mark Olsen, Wayne Johnson. (2017) Reliability and Comparison of Measurements of the Tibialis Posterior Cross-Sectional Area via Ultrasound Imaging.
 9. *Rocky Mountain American Society of Biomechanics. Estes Park, CO, USA.*
Adrienne Henderson, Joaquin Barrios, Dustin Bruening. (2017) Arch Structure and Loading Pattern May Predict Running Foot Mechanics.
 10. *Southwest Chapter of American College of Sports Medicine. Costa Mesa, CA, USA.*
Adrienne Henderson, Dustin Bruening. (2016) Choosing a Multi-Segment Foot Model for Sports Applications.

SCHOLARSHIPS, GRANTS, AND AWARDS

Source: University of Delaware, KAAP Department, Newark, DE

Amount: \$500 (Funded)

Title: Slobodan Jaric Travel Award

Principal Investigator: Henderson, Adrienne

Date: March 2023

Source: University of Delaware, KAAP Department, Newark, DE

Amount: \$2,500 (Funded)

Title: KAAP Doctoral Research Fund

Principal Investigator: Henderson, Adrienne

Date: December 2021

Source: National Science Foundation (Dare Program)

Amount: \$402,021 (Funded)

Title: Don't forget the foot! Exposing foot energetics to enhance foot orthoses and gait rehabilitation

Principal Investigator: Arch, ES; Bruening, DA

Co-Investigator: Henderson, AD; Williams, L

Date: February 2021

Source: Brigham Young University, Gerontology Program, Provo, Utah

Amount: \$2,000 (Not Funded)

Title: BYU Gerontology Grant

Principal Investigator: Henderson, AD

Date: October 2017

Source: Brigham Young University, Department of Exercise Sciences, Provo, Utah

Amount: \$1,300 (Funded)

Title: Student Research Funding

Principal Investigator: Henderson, AD

Date: October 2017

Source: Brigham Young University Graduate Studies, Provo, Utah

Amount: \$400 (Funded)

Title: Research Presentation Award

Principal Investigator: Henderson, AD

Date: September 2017

TEACHING EXPERIENCE

Guest Lecturer

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 617 - Biomechanical Instrumentation**
December 7, 2022
Topic: Plantar Pressure – Systems and Measurement (included demonstration of Novel Pedar Pressure Insoles)
- Developed all lecture content

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 105 – Freshman Seminar in Exercise Science**
November 18, 2022
Topic: Representative on a graduate student panel

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 617 - Biomechanical Instrumentation**
December 8, 2021
Topic: Plantar Pressure – Systems and Measurement (included demonstration of Novel Pedar Pressure Insoles)
- Developed all lecture content

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 420/620- Functional Human Anatomy**
September 16, 2021
Topic: Foot Muscles and Neurovasculature
- Developed all lecture content

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 420/620- Functional Human Anatomy**
September 2020
Topic: Anatomical Structures of the Foot
- Developed all lecture content

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 420/620- Functional Human Anatomy**
September 2019
Topic: Cross Sections and Anatomical Structures of the Foot
- Developed all lecture content

Brigham Young University, Provo, Utah
Department of Exercise Sciences
Course: **ExSc 440- Musculoskeletal Human Anatomy**
November 2017

- Topic: The Brachial Plexus
- Developed all lecture content

Teaching Assistant

University of Delaware, Newark, Delaware
Department of Kinesiology and Applied Physiology
Course: **KAAP 420/ 620- Functional Human Anatomy**
September 2019 – December 2021

Responsibilities Include:

- Dissection instruction
- Anatomical instruction on cadavers and models
- Cadaver preparation and prosection
- Pin tests and quizzes
- Grade tests and quizzes

Course: **KAAP 425 Lab- Biomechanics of Human Motion**

February 2019 – May 2019

Responsibilities Include:

- Class instruction
- Graded quizzes and lab worksheets

Brigham Young University, Provo, Utah

Department of Exercise Sciences

Course: **EXSC 440 Lab- Advanced Musculoskeletal Human Anatomy**

May 2014 – June 2018

Responsibilities Include:

- Lab instruction on cadavers
- Cadaver preparation and prosection
- Pin tests and quizzes
- Grade tests and quizzes

Brigham Young University, Provo, Utah

Department of Exercise Sciences

Courses: **EXSC 363 Kinesiology and Biomechanics**

EXSC 440 Lecture- Advanced Musculoskeletal Human Anatomy

EXSC 460 Orthopedic Impairments

May 2014 – June 2018

Responsibilities Include:

- Hold office hours for individual and group instruction
- Provide guidance for assignments and semester project
- Teach class when professor was out of town
- Grade assignments and semester project
- Assist in class organization and test writing
- Hold test reviews

CAREER DEVELOPMENT

Workshops

Grant Writers' Seminars and Workshops

University of Delaware, Newark, DE

June 7, 2023

Summer Institute on Teaching

University of Delaware, Newark, DE

June 1 – 2, 2022

Courses Included

- Best Practices from the Science of Learning: Retrieval and Spacing
- Attention in the Classroom
- You, Too, Can Bring JEDI (Justice, Equity, Diversity, and Inclusion) into your Classroom
- Pronouns, Power, & Responsibility in the Syllabus
- Making the Most of your Lecture Slides

Effective Grant Applications: Taking It To the Next Level

Great Plains IDeA-CTR Grant Writing Workshop: Virtual Meeting

June 7, 2022

American Society of Biomechanics, Virtual Meeting

August 10, 2021

How To Be a Culturally Competent Mentor

Summer Institute on Teaching

University of Delaware, Newark, DE

June 3, 2020

Courses Included

- Use of educational technology in college teaching
- Reducing anxiety in the classroom
- From experiment to journal paper

Service

University of Delaware Student Chapter of the American Society of Biomechanics

October 14, 2022 – August 2023

President, Founder

American Society of Biomechanics East Coast Conference

Fall 2022 – Spring 2023

Organizing Committee Member

High School Anatomy Lab Tour/ Instruction

December 16, 2021

Cadaver Anatomy Lab Representative

Blue and Golden Recruitment Day

October 9, 2021

Cadaver Anatomy Lab Representative

American Society of Biomechanics, Virtual Meeting

August 13, 2021

Moderator, Thematic Poster Session, Footwear

National Biomechanics Day
April 7, 2021
Module Developer and Presenter

National Biomechanics Day
April 6, 2019
Module Developer and Presenter

Undergraduate Mentoring Jordan Bunting (2023)
 Hannah Kennedy (2021-2022)
 Jess Crawford (2021-2022)
 Samantha Stubbe (2023)
 Laura Weinstein (2022)
 Kevin Wolynetz (2022-2024)

Society Memberships American Society of Biomechanics (since 2018)
 International Women in Biomechanics (since 2020)

PROFESSIONAL EXPERIENCE

Research Assistant University of Delaware, Newark, DE
 Orthotics & Prosthetics for Enhanced Mobility Laboratory
 September 2021 – Present
 Responsibilities Include:
 - Data collection, reduction, analysis, and interpretation
 - Study design and IRB approval forms
 - Train new lab members- graduate and undergraduate levels
 - Recruitment of research participants

Brigham Young University, Provo, Utah
Human Performance Research Center
April 2015 – August 2018
Responsibilities Include:
- Coordination of other research assistants
- Recruitment of research participants
- Data collection, reduction, analysis, and interpretation
- Assisted with study design and IRB approval forms
- Built and Maintained research group website
- Presented research findings at conferences

COMPLETED GRADUATE COURSES

Orthopaedic Anatomy
Laboratory Methods and Procedures
Orthopaedic Pathomechanics
Research Methods in Exercise Science

Mechanical Analysis of Activities
Diagnostic Testing
Biomechanical Modeling
Computer Programming in Kinesiology
Research Technology in Biomechanics
Exercise Physiology
Clinical Biomechanics
Introduction to Programming in MatLab
Motor Learning and Control
Biomechanical Instrumentation
Applied Multivariate Data Analysis
Biomechanical Methods
Computational Tools: Visual 3D
Electromyographic Kinesiology
Statistical Research Methods