Ashley Collimore, Ph.D.

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EDUCATION

9/2023 – present
Postdoctoral Associate
Boston University, Boston, MA
Advisor: Jana Iverson, PhD

9/2018 – 8/2023
PhD in Rehabilitation Sciences
Boston University, Boston, MA
Dissertation: Comparative Analysis of Neuromotor Control Measures for Identifying Primary Impairments in Post-Stroke Walking
Advisor: Louis Awad, PT, DPT, PhD

8/2013 – 5/2017
BSE in Mechanical Engineering and Applied Mechanics
University of Pennsylvania, Philadelphia, PA

RESEARCH EXPERIENCE

2023 – present
Infant Communication Laboratory
Postdoctoral Associate, Boston University, Boston, MA

2022 – 2023
Biodesign Laboratory
Visiting Graduate Student, Harvard University, Cambridge, MA

2019 – 2022
Wyss Institute for Biologically Inspired Engineering
Visiting Graduate Student, Harvard University, Cambridge, MA

2018 – 2023
Neuromotor Recovery Laboratory
Graduate Research Assistant, Boston University, Boston, MA

2018 – 2023
Spaulding Rehabilitation Hospital
Research Trainee, Spaulding Rehabilitation Hospital, Charlestown, MA

2015 – 2016
Modular Robotics Laboratory
Undergraduate Research Assistant, University of Pennsylvania, Philadelphia, PA

TEACHING EXPERIENCE

Boston University

Spring 2024
Foundations of Motor Control (HP771)
Guest Lecturer (Muscle Synergies)

Fall 2021, Spring 2024
Instrumentation for Human Movement (HP737)
Guest Lecturer (Instrumented Treadmills)

Fall 2021 & 2022
Scientific Basis of Human Movement (PT550)
Guest Lecturer (Principles of Neuromechanics)
Lab Coordinator

Fall 2020
Statistical Methods 2 (MA614)
Grader

University of Pennsylvania

Fall 2016 – Spring 2017
Mechanical Engineering Year 3 (MEAM347 & 348)
Teaching Assistant

INDUSTRY EXPERIENCE

Matchstick LLC

2017 – 2018 Associate, Early Career Experience , Boonton, NJ

2016 – 2017 Engineering Intern, Boonton, NJ

Summer 2015 **Six Flags Great Adventure**
Engineering Intern, Jackson, NJ

PUBLICATIONS

Peer Reviewed Papers

8. **Collimore AN***, Alvarez JT*, Sherman DA, Gerez LF, Barrow N, Choe DK, Binder-Macleod S, Walsh CJ, and Awad LN. A Portable, Neurostimulation-Integrated, Force Measurement Platform for the Clinical Assessment of Plantarflexor Central Drive. *Bioengineering*. 2024. *co-first authors
7. Spangler J*, Mitjans M*, **Collimore AN**, Gomes-Pires A, Levine DM, Tron R, Awad LN. Automation of Functional Mobility Assessments at Home Using a Multimodal Sensor System Integrating Inertial Measurement Units and Computer Vision (IMU-Vision). *Physical Therapy Journal*.2023. *co-first authors
6. Roto Cataldo AV, **Collimore AN**, Spangler J, Ribeirinha-Braga L, Hutchinson K, Wang Q, Thompson L, Awad LN. Enhancing neuroplasticity in the chronic phase after stroke: effects of a soft robotic exosuit on exercise intensity and brain-derived neurotrophic factor. *IEEE Open Journal of Engineering in Medicine and Biology*.2023.
5. **Collimore AN***, Roto Cataldo AV*, Aiello AJ, Sloutsky R, Hutchinson K, Harris B, Ellis T, Awad LN. Autonomous control of music to retrain walking after stroke. *Neurorehabilitation and Neural Repair*. 2023. *co-first authors
4. **Collimore AN**, Aiello AJ, Pohlig RT and Awad LN. The Dynamic Motor Control Index as a Marker of Age-Related Neuromuscular Impairment. *Frontiers in Aging Neuroscience*. 2021.
3. Mitjans M, Theofanidis M, **Collimore AN**, Disney ML, Levine DM, Awad LN, Tron R. Visual-Inertial Filtering for Human Walking Quantification. *IEEE International Conference on Robotics and Automation (ICRA)*. 2021.
2. Sloutsky R, Yücel MA, **Collimore AN**, Ottman E, Ellis TD, Walsh CJ, Boas DA, Awad LN. Targeting post-stroke walking automaticity with a propulsion-augmenting soft robotic exosuit: toward a biomechanical and neurophysiological approach to assistance prescription. *IEEE EMBS Conference on Neural Engineering. Virtual*. 2021.**Best Paper Award.**
1. Hutchinson K, Sloutsky R, **Collimore A**, Adams B, Harris B, Ellis T, Awad LN. Automating a progressive and individualized rhythm -based walking training program after stroke: A music-based digital therapeutic. *Neurorehabilitation and Neural Repair*. 2020.

Under Review:

3. **Collimore AN**, Sherman DA, Bonato P, Awad LN. The dynamic motor control index as a marker of impaired neuromotor control after stroke.
2. **Collimore AN**, Pohlig RT, Awad LN. Minimum Muscle Sensor Set Needed to Identify Age-Related Impairments in the Neuromuscular Control of Walking Using the Dynamic Motor Control Index.
1. Mitjans M, Theofanidis M, **Collimore AN**, Pires A, Disney ML, Levine DM, Awad LN, Tron R. A visual-inertial filtering approach to 3-D gait estimations for clinical mobility assessment.

In Preparation:

1. **Collimore AN**, Walsh C, Bonato P, Ellis T, Awad LN. A Combination of Measures of Neuromotor Control is Needed to Identify Post-Stroke Impairments in Walking Biomechanics and Function.

National and International Conference Presentations

11. **Collimore AN**, Alvarez JT, Sherman DA, Walsh CJ, and Awad LN. Plantarflexor Central Drive Symmetry is Associated with Poststroke Walking Function in Community Ambulators. (PODIUM) *American Society of Biomechanics Annual Meeting*. Knoxville, TN. 2023. **Clinical Biomechanics Award Finalist.**
10. **Collimore AN***, Alvarez JT*, Barrow NB, Sherman DA, Binder-Macleod S, Walsh CJ, and Awad LN. Accuracy of a Portable Device for Measuring Plantarflexor Muscle Strength and Central Drive. (POSTER) *APTA Combined Sections Meeting*. San Diego, CA. 2023. *co-first authors
9. Porciuncula F, Arumukhom Revi D, Baker TC, Spangler JE, **Collimore AN**, Ribeirinha-Braga L, Roto Cataldo A, Sloutsky R, Bonato P, Breen J, Ellis TD, Walsh CJ, and Awad LN. Walking Faster with Soft Robotic Exosuits: A Responder Analysis of Exosuit-Augmented Walking Speed Post-Stroke. (PLATFORM) *APTA Combined Sections Meeting. San Diego, CA. 2023*.

8. Cataldo AR, Sloutsky R, **Collimore AN**, Spangler J, Ribeirinha-Braga L, Porciuncula F, Hutchinson KJ, Wang QM, Thompson LV, Awad LN. Soft Robotic Exosuit Assistance Facilitates High Intensity Gait Training after Stroke.(POSTER) *APTA Combined Sections Meeting. San Diego, CA. 2023*.
7. **Collimore AN**, Pohlig RT, Awad LN. Minimum Viable Muscle Set for Identifying Impairments in the Neuromuscular Control of Walking Using the Dynamic Motor Control Index. (POSTER) *North American Congress on Biomechanics*. Ottawa, Canada. 2022.
6. **Collimore AN**, Pohlig RT, Awad LN. Identifying age-related changes in the neuromuscular control of walking using reduced muscle sets. (PLATFORM) *World Congress of Biomechanics*. Taipei, Taiwan. Virtual. 2022.
5. **Collimore AN***, Roto AV*, Hutchinson K, Harris B, Awad LN. Rhythmic Auditory Stimulation Improves Cost of Transport and Asymmetry After Stroke.*co-first authors. (PLATFORM) *American Society of Biomechanics Annual Meeting*. Virtual. 2021.
4. **Collimore AN**, Aiello AJM, Pohlig RT, Awad LN. The dynamic motor control index is a better marker of age-related neuromotor impairments than the number of muscle synergies: Toward early detection of walking deficits. (POSTER) *Neural Control of Movement Annual Meeting*. Virtual. 2021.
3. Alvarez AM, **Collimore AN**, Aiello AJM, Binder-Macleod SA, Awad LN. Propulsion timing affects the relationship between paretic propulsion and long-distance walking function after stroke. (POSTER) *American Society of Biomechanics Annual Meeting*. Virtual. 2020.
2. O'Connor MV, **Collimore AN**, Roto AV, Aiello AJ, Sloutsky R, Harris B, Awad LN. Targeting Rhythm to Improve Economy: One Session of Music-Based Rhythmic Locomotor Training Improves Post-Stroke Economy. (POSTER) *Combined Sections Meeting of the American Physical Therapy Association*. Denver, CO. 2020.
1. Coyne M, Thomas C, **Collimore A**, Franzese C, and Hwang C. Early user centered insights on voice integrated technologies through retrospective analysis. (POSTER) *Connected Health Conference*. Boston, MA. 2017.

Regional Conference Presentations

1. **Collimore AN**, Aiello AJM, Awad LN. Complexity of neuromuscular control is impaired with aging and associated with reduced central drive to the paretic plantarflexors after stroke: A preliminary study. (POSTER) *NeuroBoston Fall 2020 Symposium*. Boston, MA. 2020.

HONORS AND AWARDS

2023
Hartwell Postdoctoral Fellow
The Hartwell Foundation

2023
Top 3 Finalist Clinical Biomechanics Award
Annual American Society of Biomechanics Meeting

2023
3-Minute Thesis Finalist
Annual American Society of Biomechanics Meeting

2023
American Society of Biomechanics Student Travel Award
Annual American Society of Biomechanics Meeting

2022
World Council of Biomechanics Student Bursary Award
World Congress of Biomechanics

2021
NRSA Predoctoral Fellow
Eunice Kennedy Shriver National Institute of Child Health & Human Development

2021
Best Paper Award
IEEE EMBS Conference on Neural Engineering

2017
Magna Cum Laude
University of Pennsylvania

2016 – 2017
Chapter President of the Year
Office of Fraternity and Sorority Life, University of Pennsylvania

PROFESSIONAL ACTIVITIES

Mentorship

Physical Therapy Practicum Teams

2024 — *Object Transport During Locomotion*, Boston University

Undergraduate Mentees

2022–2023 — Noah Barrow, Undergraduate Research Opportunities Program, Boston University

2021–2022 — William Swift, Undergraduate Research Opportunities Program, Boston University

Senior Design Teams

2019-2020 — *Point-of-Care System to Estimate Individual Limb Propulsion Force During Walking*, Biomedical Engineering, Boston University

Selected Panels, Talks, and Blog Posts

2023 — **"Graduate Fellowships" Panelist**
Graduate Women in Science and Engineering (GWISE), Boston University, Boston, MA

2023 — **Characterizing poststroke neuromuscular impairments and their implications for long-term rehabilitation**
Neurorehabilitation and Biomechanics Research Section. National Institutes of Health. Bethesda, MD.

2022 — **Neuromuscular adaptations to walking with a soft robotic exosuit**
Robotics And Rehabilitation Lab. Columbia University, NY.

2022 — **"Wearable Sensors" Session Moderator**
North American Congress on Biomechanics. Ottawa, Canada.

2021-2022 — **"Women in Biomechanics" Panel Co-Chair**
International Women in Biomechanics. World Congress of Biomechanics. Taipei, Taiwan.

2021 — **International Women in Biomechanics Blog**
NIH F31 Part 1: Overview of the Application and Submission Process
NIH F31 Part 2: 13 Tips and Tricks to Writing a Successful Application

2017 — **"Professional Women in Healthcare" Panel Moderator and Organizer**
Matchstick LLC. Boonton, NJ

2016 — **"Career Education and Strategies" Panelist**
Matchstick LLC. Boonton, NJ

Grants

2020 — **National Institutes of Health F31 Predoctoral Fellowship**
From post-stroke assistance to rehabilitation: Neuromuscular adaptations to walking with a soft robotic exosuit
Role: PI; Funded, Impact Score: 1.3

2020 — **American Heart Association Predoctoral Fellowship**
Role: PI; Not Funded, 31st percentile

Journal Reviewer

2021 — **Journal of Neural Engineering and Rehabilitation**
Reviewer

2018, 2020 — **Stroke**
Junior Reviewer

Certifications

2021 — **The Inclusive STEM Teaching Project**
Verified Track, BUx

MEMBERSHIPS

2023 – present **North American Society for the Psychology of Sport and Physical Activity**

2023 – present **American Society of Biomechanics**

2020 – present **International Women in Biomechanics**

2020 – present **International Society of Biomechanics**

LEADERSHIP AND SERVICE

2022-present **International Women in Biomechanics**
Secretary

2022-2023 **Rehabilitation Sciences: Sargent College**
PhD Student Rep, Boston University, Boston, MA.

Alpha Delta Pi Sorority

2019 – present Foundation Advisory Council Member

2019 – present Chapter Advisor

Undergraduate Positions Chapter President, Membership Education Vice President, Spirit Chair

Spring 2015 **Global Biomedical Service Program**
University of Pennsylvania, Philadelphia, PA
& Hong Kong Polytechnic University, Hung Hom, Hong Kong

2014 – 2017 **American Society of Mechanical Engineers**
Public Relations Chair, University of Pennsylvania, Philadelphia, PA