

Justin Matties, MS

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EDUCATION

Sep 2024 – Present

PhD, Kinesiology

PI: Katherine Boyer, PhD

4.0 GPA

University of Massachusetts Amherst, Amherst, MA

Sep 2024 – Present

Certificate, Statistical and Computational Data Science

4.0 GPA

Aug 2022 – May 2024

MS, Kinesiology

PI: K. Michael Rowley, PhD

4.0 GPA

California State University East Bay, Hayward, CA

Master's Thesis: Matties JR. (2024). *Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology*. [Master's Thesis, California State University East Bay]. ScholarWorks.

April 2023 - July 2023

Certificate, Footwear Design and Development

4.0 GPA

Lasell University, Newton, MA

Aug 2019 - May 2022

BS, Kinesiology, Minor in Business Administration

4.0 GPA

California State University East Bay, Hayward, CA

Graduate Coursework

Regression and Analysis of Variance, Mechanical Analysis of Human Motion, Footwear Biomechanics, Physical Activity Epidemiology, Advanced Clinical Biomechanics, Motor Control and Learning, Statistical Computing, Conducting Research in Kinesiology, Skeletal Muscle Biology, Writing Scientific Manuscripts in Kinesiology, Movement Neuromechanics Journal Club, Intro to Numerical Computing with Python, Biomechanics, Knowledge Construction in Kinesiology, Assessment of Human Performance, Critical Perspectives on the Body, Mythbusters in Kinesiology, Footwear Product Development, Shoe Design Basics, Footwear Materials, Color and Trend Analysis.

RESEARCH & PROFESSIONAL EXPERIENCE

Research Assistant

(Aug 2024 – Present)

Supervisor: Katherine Boyer, PhD

Musculoskeletal & Orthopedic Biomechanics Laboratory

University of Massachusetts, Amherst, MA.

- Leading biomechanics data collections, analysis, and manuscript preparation for the UFO study (Understanding Fatigue in Older Adults) [NIH R01 AG058607].
- Leading biomechanics data collections and analysis of 3D printed variable stiffness lattice design shoes, while providing design insights and feedback, to optimize footwear characteristics for individuals with medial compartment knee osteoarthritis [Manning Innovation Grant].
- Participating in NSF Innovation Corps (I-Corps) programs (New England I-Corps Spark and Fusion programs) and leading 24 customer discovery interviews for an ongoing 3D printed midsole project.
- Assisting with data collections for the SAGE study (Study of Aging, Gait and Energetics) [NIH R01AG068102].
- Developing and maintaining MRI data processing pipelines and implementation of the nnU-Net muscle segmentation model to semi-automate data processing for the Cultivating Healthy Aging and Muscle Performance (CHAMP) [NIH R01 AG047245], UFO, and SAGE studies.
- Mentoring undergraduate and master's students, including one honors thesis student, on research projects.

Teaching Assistant

(Aug 2024 – Present)

Kinesiology Department

University of Massachusetts, Amherst, MA.

- Biomechanics (Kin 430); fall 2025 semester; supervisor: Abby Salvatore, MS, CSCS.
- Anatomy and Physiology I & II (Kin 270 & 272); fall 2024 semester; supervisor: Lorie Woodson, PhD.

Graduate Student Assistant (May 2023 – Aug 2024)

B.E.T. McNair Scholars Program

Supervisors: Amy Marshall & Jenny O, PhD

California State University East Bay, Hayward, CA

- Managed program operations and communications; created and facilitated professional development workshops; and mentored low-income, first-generation undergraduate students, and those from historically underrepresented groups, to engage in research, prepare for graduate school, and feel empowered to navigate the hidden curriculum of higher education.
- Granted emeritus status in August 2024.

Applied Biomechanics Consultant (March 2024 – June 2024) Supervisor: Anton Galvas
AiKYNETIX Houston, TX (remote)

- Provided insights and guidance on the integration of biomechanical principles into AI models aimed at measuring running biomechanics and providing footwear recommendations.
- Conducted validation testing of phone-based 3D motion capture application.

Lead Kinesiology Mentor (Aug 2023 – Dec 2023) Supervisor: Vanessa Yingling, PhD
Kinesiology Department California State University East Bay, Hayward, CA

- Mentored undergraduate students to conduct literature reviews and create new gait analysis lab curriculum for Biomechanics (KIN303), followed by co-facilitating labs.

Teaching Associate (Aug 2022 – Dec 2023) Supervisor: Wendy Rummerfield, PhD
Department of Statistics California State University East Bay, Hayward, CA

- Instructed and supported over 120 undergraduate students in Intro to Elementary Statistics (STAT100).

Student Assistant (Jan 2023 – May 2023) Supervisor: Jenny O, PhD
Center for Student Research California State University East Bay, Hayward, CA

- Mentored Center for Student Research scholars, managed communications and program administration.

Learning Assistant (Aug 2020 – May 2022) Supervisor: Alicia Still
STEM Lab California State University East Bay, Hayward, CA

- Assisted graduate teaching associates and tutored undergraduate students in Intro to Elementary Statistics (STAT100).

PUBLICATIONS:

Matties JR, Rowley KM. (2026) Cross-Country Runners with Previous Experience with Advanced Footwear Technology Demonstrate Greater Performance Benefits. *Footwear Science*.
<https://doi.org/10.1080/19424280.2026.2637938>

Matties JR, Rowley KM. (2025). Sex-specific metabolic and biomechanical responses to advanced footwear technology. *Footwear Science*, 17(3), 153–165. <https://doi.org/10.1080/19424280.2025.2535284>

Submitted for Publication

Matties JR, Kerr JD, Rowley KM. (2024) *Footwear-specific biomechanical and energetic responses to 8 weeks of training in advanced footwear technology*. Manuscript submitted for publication. Preprint DOI: 10.1101/2024.11.20.624520

Conference Abstracts

Matties JR, Rowley KM. (2025) Sex-specific metabolic and biomechanical responses to advanced footwear technology. *Footwear Science*. 17:sup1, S156-S157, DOI: 10.1080/19424280.2025.2493752

Matties JR, Rowley KM. (2024) Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology. *Medicine & Science in Sports & Exercise*. 56(10S), pp. 593 [Poster]. DOI: 10.1249/01.mss.0001057700.89381.19

Matties JR, Rowley KM. (2023) A pilot study: effects of an 8-week training intervention in carbon-plated running shoes. *Footwear Science*. 15(sup1), pp. S182–S183. DOI: 10.1080/19424280.2023.2202943

Matties JR, Rowley KM. (2023) A pilot study: effects of an 8-week training intervention in carbon-plated running shoes. *Medicine & Science in Sports & Exercise*. 55(9S), pp. 42. DOI: [10.1249/01.mss.0000980104.14728.1a](https://doi.org/10.1249/01.mss.0000980104.14728.1a)

Conference Proceedings

Matties JR, Kerr JD, Rowley KM. (2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *Joint Statistical Meetings 2023 Proceedings*. DOI: [10.5281/zenodo.10002021](https://doi.org/10.5281/zenodo.10002021)

GRANT PROPOSALS AND FUNDING

2026

Stryd

Research Support: Four Stryd 5.0 pods and memberships (\$1500)

Nahan, K, **Matties JR**, Fiske, Z

The Route 66 Centennial Run: A Case Study of 100 marathons in 100 days

National Science Foundation (NSF) Innovation Corps (I-Corps): New England Region

New England I-Corps Fusion Microgrant: \$1000 to conduct customer discovery interviews

Matties JR, Wojda SJ

Identifying Needs and Challenges with 3D Printing Midsoles in the Footwear Industry

NASA Massachusetts Space Grant Consortium (MASGC)

MASGC Summer 2026 Fellowship: \$5320

Matties JR

Optimizing the Biomechanical Efficacy of 3D-Printed Variable Stiffness Shoes for Knee Osteoarthritis

UMass Graduate School

UMass Graduate School Predissertation Grant: \$1496 in research supplies

Matties JR

Quantifying Perception of the Foot-Shoe Interface During Walking

2025

International Society of Biomechanics (ISB) Council

ISB Technical Group Travel Grant: \$500 in conference travel support

Matties JR

Sex-specific metabolic and biomechanical responses to advanced footwear technology

UMass Amherst Department of Kinesiology

UMass Kinesiology Graduate Student Travel Grant: \$700 in conference travel support

Matties JR

Lower Extremity Joint Work Redistribution After A 30-Minute Treadmill Walk Is Not Explained By Baseline Walking Mechanics, Knee Extensor Strength, Or Physical Activity In Older Adults

UMass Amherst Graduate Student Government (GSG)

Graduate Student Government (GSG) Travel Grant: \$138 in conference travel support

Matties JR

Does a 30 Minute Treadmill Walk Result in a Distal to Proximal Shift in Older Adults?

2023

Cal State East Bay Center for Student Research

Scholar: \$2,000 in supplies, \$2,500 in tuition support

Matties JR, Rowley KM (Advisor)

Effects of an 8-week training intervention in carbon plated running shoes: How physiological adaptations affect race day performance benefits

Cal State East Bay College of Education and Allied Studies

SEED Research Grant: \$4000 in footwear

Matties JR

Effects of an 8-week training intervention in carbon plated running shoes: How physiological adaptations affect race day performance benefits

2022

Nike, Inc.

The 2023 Nike Award for Athletic Footwear Research:

Celebrating inclusivity in footwear science, \$5,000 in footwear

Matties JR, Rowley KM (Advisor)

Effects of an 8-week training intervention in carbon plated running shoes: How physiological adaptations affect race day performance benefits

Cal State East Bay Center for Student Research

Level 3 Scholar: \$2,000 in footwear, \$5,345 in tuition support

Matties JR, Rowley KM (Advisor)

Effects of an 8-week training intervention in carbon plated running shoes: How physiological adaptations affect race day performance benefits

Labfront

Summer 2022 Research Grant (partial award): Labfront advanced account (\$995)

Matties JR, Rowley KM (Advisor)

Effects of an 8-week training intervention in carbon plated running shoes: How physiological adaptations affect race day performance benefits

RESEARCH PRESENTATIONS (ABSTRACTS) *Presenting Author

Matties JR,* Brancati RJ, Smith ZH, Kent JA, Boyer KA. (July 2026) Lower extremity joint work redistribution after a 30-minute treadmill walk is not explained by baseline walking mechanics, knee extensor strength, or physical activity in older adults. *10th World Congress of Biomechanics*. Vancouver, BC, Canada. Poster Presentation.

Fakhri SM*, Smith ZH, **Matties JR**, Chipkin SR, Kent JA, Miller MS. (March 2026) Thigh muscle power output, size and fat content respond differently in older females and males to power and resistance training. *UMOVE University of Massachusetts Student Organized Research Symposium*. Lowell, MA, USA. Podium and Poster Presentations.

Matties JR,* Brancati RJ, Smith ZH, Kent JA, Boyer KA. (July 2025) Does a 30 minute treadmill walk result in a distal to proximal shift in older adults? *International Society of Biomechanics Congress*. Stockholm, Sweden. Podium Presentation.

Matties JR,* Rowley KM. (July 2025) Sex-specific metabolic and biomechanical responses to advanced footwear technology. *Footwear Biomechanics Symposium*. Oslo, Norway. Podium Presentation.

Matties JR,* Rowley KM. (May 2024) Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology. *American College of Sports Medicine*. Boston, MA, USA. Poster.

Matties JR,* Rowley, KM. (April 2024) Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology. *California State University East Bay Student Research Showcase*. Hayward, CA, USA. Podium Presentation.

Matties JR,* Rowley, KM. (April 2024) Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology. *CSU Wide Research Competition*. San Luis Obispo, CA, USA. Podium Presentation.

Matties JR,* (March 2024) Biomechanical and energetic trends in response to 8 weeks of training in advanced footwear technology. [Masters Thesis Defense, California State University East Bay].

Matties JR,* Kerr J, Rowley KM. (Aug 2023) A Pilot Study: Effects of a 8-week training intervention in carbon-plated running shoes. *Joint Statistical Meetings*. Toronto, Ontario, Canada. Poster.

Matties JR,* Rowley KM. (Aug 2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *International Society of Biomechanics Congress*. Fukuoka, Japan. Podium Presentation.

Matties JR,* Rowley KM. (July 2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *Footwear Biomechanics Symposium*. Osaka, Japan. Poster.

Matties JR,* Rowley RM. (May 2023) A Pilot Study: Effects of a 8-week training intervention in carbon-plated running shoes. *American College of Sports Medicine*. Denver, CO, USA. Poster

Matties JR,* Rowley, KM. (April 2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *CSU Wide Research Competition*. San Diego, CA, USA. Podium Presentation.

Matties JR,* Rowley, KM. (April 2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *California State University East Bay Student Research Showcase*. Hayward, CA, USA. Podium Presentation.

Matties JR,* Rowley, KM. (April 2023) A Pilot Study: Effects of an 8-week training intervention in carbon-plated running shoes. *Cal State East Bay Grad Grand Slam Research Competition*. Hayward, CA, USA. Podium Presentation.

GUEST LECTURER:

Matties JR. (Spring 2024) KIN 608 Mythbusters: How can Students Leverage the Power of AI? *California State University East Bay*. Hayward, CA, USA

Matties JR. (Fall 2023) KIN 303 Biomechanics: Biomechanics Gait Analysis Lab. *California State University East Bay*. Hayward, CA, USA

Matties JR. (Fall 2023) KIN 149 Aerobic Walking: Intro to Footwear Elements. *California State University East Bay*. Hayward, CA, USA.

INVITED SPEAKER:

Matties JR. (Spring 2024) Graduating Student-Athlete Ceremony [Student Speaker]. *California State University East Bay*. Hayward, CA.

Matties JR. (Spring 2024) College of Education and Allied Studies Commencement [Student Speaker]. *California State University East Bay*. Hayward, CA.

Matties JR. (Spring 2022) Graduating Student-Athlete Ceremony [Student Speaker]. *California State University East Bay*. Hayward, CA.

RESEARCH SKILLS

Visual 3D, Qualisys Track Manager, Vicon Motion Analysis, Biodex, BioPac, Acknowledge, AMTI Force Plates, Noraxon EMG, COSMED & Parvo metabolic carts, Treadmetrix (repair and maintenance), RedCap, R Studio, MATLAB, Python, nnU-Net model training for MRI muscle segmentation, Unity Cluster computing, Bash-MATLAB parallel scripting, MRI safety, Labfront, Dartfish Video Analysis.

FOOTWEAR DEVELOPMENT SKILLS

Prototyping, footwear customization, tech packs, BOM creation, footwear costing analysis, commercialization, product creation calendar, shell patterns, midsole/outsole tooling, component callouts, construction callouts, factory communication, wear testing, Adobe Illustrator, Rhino 3D.

HONORS and AWARDS:

Emeritus Status, BET McNair Program, Cal State East Bay (2024)

Mary Harrington Outstanding University Thesis Award (2024)
 American Kinesiology Association National Masters Scholar Award Honorable Mention Recipient (2024)
 Cal State East Bay Scholar Athlete of the Year (2023)
 1st Place - 37th Annual California State University Student Research Competition, Graduate Health, Nutrition and Clinical Sciences Category (2023)
 3rd Place - Cal State East Bay Grad Grand Slam Research Competition (2023)
 NCAA California Collegiate Athletic Association Elite 13 Award (2022)
 Summa Sum Laude distinction (2022)
 Dean List (Fall 2019-Spring 2022)
 Cal State East Bay Scholar Athlete of the Year (2019)

MEDIA APPEARANCES:

Hutchinson, A. (2023, June, 4). The Supershoe Revolution Continues. Here's What the Latest Research Says. *Sweat Science, Outside Magazine*. <https://www.outsideonline.com/health/training-performance/supershoe-research-acsm-conference-2023/>

Balderas, S. (2023, June, 13). Stepping into the Future: Justin Matties and Revealing the Effects of Super Shoes. *Cal State East Bay News Center*. <https://www.csueastbay.edu/news-center/2023/06/stepping-into-the-future.html>

Burfoot, A. (2023, July, 22). The Real Power of Super Shoes Could Be Supercharged Training. *The New York Times*. <https://www.nytimes.com/2023/07/22/sports/super-shoes-training.html>

Myers, A., Klein, M. (2024, January, 1). Mizuno Wave Rebellion Pro 2: Even Bouncier. *Doctors of Running*. <https://www.doctorsofrunning.com/2024/01/mizuno-wave-rebellion-pro-2-review-2024.html>

Klein, M., Brown, N., Salas, D. (2024, March, 5). How to Train and Adapt to Super Shoes, Calf Strain Management, and Thoughts on the Metaspeed Edge and Sky (No. 181) [Audio podcast episode]. *Doctors of Running*. Spotify. <https://open.spotify.com/episode/7IyYc0bC1ZtwpG1ypSvFtx?si=ao-iynz7TKOtKoejE2XSoA>

Klein, M. (2024, April, 15). Do Super Shoes Reduce Muscle Soreness? *Doctors of Running*. <https://www.doctorsofrunning.com/2024/04/monday-shakeout-do-super-shoes-reduce.html>

Kimberly H. (2024, May, 8). To the Runners: Don't be afraid to race towards the unknown. *Cal State East Bay News Center*. <https://www.csueastbay.edu/news-center/2024/05/to-the-runners-dont-be-afraid-to-race-toward-the-unknown.html>

PROFESSIONAL SERVICE:

President, UMass American Society of Biomechanics (ASB) Student Chapter (2025-present)

Journal Manuscript Peer Review

Journal of Science and Medicine in Sport

Volunteering

International Biomechanics Day (2023-2025)

Senior education and outreach (2025): Lathrop Communities, Hadley Senior Center

ORGANIZATIONAL MEMBERSHIP:

2023-Present	<i>International Society of Biomechanics</i>
2023-Present	<i>Footwear Biomechanics Group</i>
2026-Present	<i>American Society of Biomechanics</i>

2023-2024

American Statistical Association

2022-2024

American College of Sports Medicine