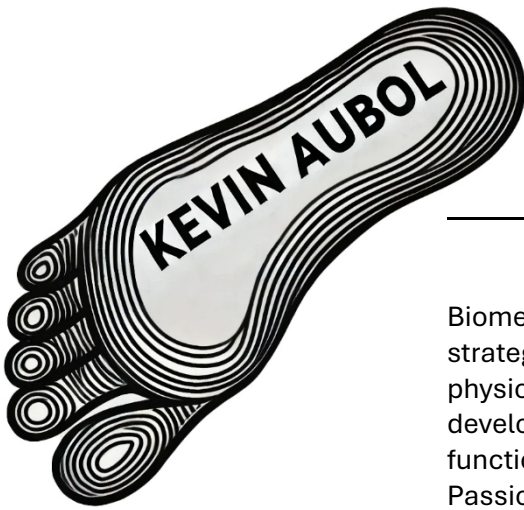




Biomechanics Research Scientist

Data-Driven Innovation and Creative Research

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Summary

Biomechanics researcher with extensive experience in developing innovative strategies to inform research design. Skilled at synthesizing biomechanics, physiology, and user feedback into actionable insights for product development. Adept at managing multiple projects, collaborating with cross-functional teams, and developing tools to improve testing efficiency. Passionate about driving innovation to ensure footwear exceeds consumer expectations for fit, performance, and durability.

Education

PhD, Health and Rehabilitation Sciences,
Drexel University, 2022

MS, Exercise Science,
Central Washington University, 2016

BA, Exercise Science,
Willamette University, 2013

Skills

Biomechanics Tools:

Motion capture, pressure insoles, force plates, accelerometry, GPS, metabolic measurements

Innovation: Product development, innovation strategy, iterative design, concept ideation, scientific storytelling

Data Analysis: Statistical modeling, signal processing, algorithm development, data visualization

Software: Python, MATLAB, Autodesk Fusion

Footwear Testing:

Biomechanical evaluation, user perception analysis, reporting actionable insights

Experience

LifeLens Technologies, Inc | Ivyland, PA

Senior Bioinformatics Scientist (2025-Present)

- Developed algorithms to predict health outcomes from wearable sensor data using advanced statistical modeling and machine learning techniques.
- Implemented and maintained end-to-end analysis pipelines in MATLAB and Python to support large-scale physiological data processing, feature extraction, and model evaluation.
- Led exploratory analyses on multimodal wearable datasets to identify meaningful physiological patterns across individuals and time.
- Collaborated with cross-functional teams to translate analytical findings into interpretable insights for research and product stakeholders.
- Designed and validated custom signal-processing workflows for time-series physiological data, including quality control and artifact handling.

Arena Labs | Remote

Contract Biostatistician/Data Scientist (2025-Present, part-time)

- Analyzed wearable and survey-based data to evaluate interventions aimed at reducing burnout in healthcare workers.
- Developed statistical models and conducted time-series analysis to assess longitudinal outcomes.
- Created Python-based pipelines for cleaning and processing noisy, real-world survey and physiology data.
- Prepared reports and presentations to communicate the impact and effectiveness of interventions.

Drexel University | Philadelphia, PA

Research Scientist (2024–2025), Postdoctoral Researcher (2022–2024), Graduate Research Fellow (2017–2022)

- Partnered with engineers and designers to develop footwear-integrated assistive devices, including a patent-pending product to enhance performance and reduce injury risk.
- Recruited diverse participant pools for human-subjects studies, ensuring representation of target consumer demographics.
- Conducted biomechanics studies to inform footwear design, using tools like motion capture, pressure insoles, and accelerometers.

- Improved data workflows, reducing processing time by 75% through automation in MATLAB.
- Authored reports and presented findings to cross-functional stakeholders, translating data into actionable recommendations.
- Designed custom testing platforms for biomechanics research, including mobile solutions for field-based testing.
- Provided expertise to footwear and wearable electronics companies, fostering collaborations to advance product performance and user experience.
- Designed algorithms to improve data quality and reliability for wearable devices and GPS-based analyses.

Central Washington University | Ellensburg, WA

Graduate Research Assistant (2015–2016)

- Recruited participants to study the biomechanical impact of maximally cushioned running shoes on injury prevention and performance.
- Created testing protocols and analysis tools to study lower extremity biomechanics.
- Taught undergraduate labs in biomechanics and exercise science.

Projects

- **Running Surface Identification Tool:** Developed a Python-based tool integrating GPS data and external APIs to classify running surfaces, enabling new insights into training environment effects on biomechanics.
- **Real-Time Motion Capture Feedback:** Built an integrated system using Vicon Nexus, MATLAB, and Visual3D to provide live feedback on marker quality, accelerating lab training and improving data consistency.
- **Biomechanics and Product Data Automation:** Created scalable tools to automate processing of large, multimodal datasets (biomechanics, physiology, user feedback), increasing efficiency in product testing and research workflows.

Publications

- **Aubol, K. G.,** Silbernagel, K. G., Baxter, J. R., Shewokis, P. A., Milner, C. E. (2026). Increasing ground contact time reduces Achilles tendon forces during rearfoot strike running outdoors. *Journal of Science and Medicine in Sport*, 29(1), 100-105.
- **Aubol, K. G.,** Milner, C. E. Whipping or tearing? (2024). Mechanisms for the development of Achilles tendinopathy in runners. *The Foot*, 59.
- **Aubol, K. G.,** & Milner, C. E. (2023). Minimum sampling frequency for valid and reliable tibial acceleration measurements during running in the field. *Journal of Applied Biomechanics*, 39(3), 193-198.
- **Aubol, K. G.,** & Milner, C. E. (2020). Foot contact identification using a single triaxial accelerometer during running. *Journal of Biomechanics*, 105, 109768.
- **Aubol, K. G.,** Hawkins, J. L., & Milner, C. E. (2020). Tibial acceleration reliability and minimal detectable difference during overground and treadmill running. *Journal of Applied Biomechanics*, 36(6), 457-459.
- Milner, C. E., Hawkins, J. L., & **Aubol, K. G.** (2020). Tibial acceleration during running is higher in field testing than indoor testing. *Medicine & Science in Sport & Exercise*, 52(6), 1361-1366.
- Foch E., **Aubol, K. G.,** & Milner, C. E. (2020). Relationship between iliotibial band syndrome and hip neuromechanics in women runners. *Gait & Posture*, 77, 64-68.