Stanford



Lara Weed

Postdoctoral Scholar, Aeronautics and Astronautics

Bio

BIO

Lara Weed is a Wu Tsai Human Performance Alliance Postdoctoral Fellow in the Stanford Intelligent Systems Laboratory advised by Mykel Kochenderfer. She practices human circadian engineering, turning the science of biological timing into tools that protect health and enhance performance for individuals and societies. She earned her PhD in Bioengineering at Stanford in 2026, advised by Jamie Zeitzer, as an NIH F31 fellow.

HONORS AND AWARDS

- Biomedical Engineering Senior Award, University of Vermont (2020)
- Club Sports Leader of the Year, University of Vermont (2020)
- Biomedical Engineering Junior Award, University of Vermont (2018)
- Biomedical Engineering Sophomore Award, University of Vermont (2017)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Student Member, Society for Research on Biological Rhythms (2022 - present)
- Student Member, IEEE Engineering in Medicine and Biology Society (2022 - present)
- Student Member, Institute of Electrical and Electronics Engineers (2022 - present)
- Member, Digital Medicine Society (2020 - present)
- Council Member, Bioengineering Graduate Student Association (2020 - 2024)
- Student Committee Member, American Society of Biomechanics (2019 - present)
- Student Member, Biomedical Engineering Society (2017 - present)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Stanford University , BIOE-PHD (2026)
- Ph.D., Stanford University , Bioengineering (2026)
- Master of Science, Stanford University , BIOE-MS (2022)
- B.S., University of Vermont , Biomedical Engineering (2020)

PATENTS

- Jeffrey Palmer, Brian Telfer, James Williamson, Lara Weed, Mark Buller, Rebecca Fellin, Joseph Seay. "United States Patent US20210338173A1 System and Method for Predicting Exertional Heat Stroke with a Worn Sensor", Massachusetts Institute of Technology , Cambridge , MA (US) ; U.S. Army Research Institute of Environmental Medicine , Natick , MA (US), Nov 4, 2021

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My mission is to characterize and optimize human health, rehabilitation, and performance using physiological and biomechanical signals from wearable sensors.

LAB AFFILIATIONS

- Jamie Zeitzer, Zeitzer Circadian Research Lab (6/21/2021 - - 8/31/2026)

Publications

PUBLICATIONS

- **An umbrella review of systematic reviews of the impact of wrist-worn wearables on health outcomes.** *Physiological reviews*
  Glisic, M., Llane, A., Stojic, S., Llanaj, E., Roa-Díaz, Z. M., Raguindin, P. F., Kastrati, L., Weed, L., Turakhia, M. P., Ashley, E., Muka, T., Ioannidis, J. P.
  2025
- **Circadian Phase Estimation From Ambulatory Wearables With Particle Filtering: Accuracy Depends on Initialization, Recording Duration, and Light Exposure.** *Journal of biological rhythms*
  Weed, L., Jamgochian, A., St Hilaire, M. A., Cheng, P., Kochenderfer, M. J., Zeitzer, J. M.
  2025: 7487304251392289
- **Circadian-informed modeling predicts regional variation in obesity and stroke outcomes under different permanent US time policies.** *Proceedings of the National Academy of Sciences of the United States of America*
  Weed, L., Zeitzer, J. M.
  2025; 122 (38): e2508293122
- **Adverse effects of late sleep on physical health in a large cohort of community-dwelling adults.** *European journal of internal medicine*
  Lok, R., Weed, L., Winer, J., Zeitzer, J. M.
  2024
- **Impact Of Time Of Day On Neuromuscular Performance Of The Star Excursion Balance Test In Young Women**
  Weed, L., Thompson, S., Kraus, E., Delp, S., Zeitzer, J.
  LIPPINCOTT WILLIAMS & WILKINS.2024: 257-258
- **How many days are enough? Sleep-wake timing regularity and fragmentation scores change with the number of days included.** *Journal of sleep research*
  Lok, R., Suh, S., Rue, S., Weed, L., Zeitzer, J. M.
  2024: e14332
- **Perils of the nighttime: Impact of behavioral timing and preference on mental health in 73,888 community-dwelling adults.** *Psychiatry research*
  Lok, R., Weed, L., Winer, J., Zeitzer, J. M.
  2024; 337: 115956
- **Impaired 24-h activity patterns are associated with an increased risk of Alzheimer's disease, Parkinson's disease, and cognitive decline.** *Alzheimer's research & therapy*
  Winer, J. R., Lok, R., Weed, L., He, Z., Poston, K. L., Mormino, E. C., Zeitzer, J. M.
  2024; 16 (1): 35
- **Fatigued but not sleepy? An empirical investigation of the differentiation between fatigue and sleepiness in sleep disorder patients in a cross-sectional study.** *Journal of psychosomatic research*
  Suh, S., Lok, R., Weed, L., Cho, A., Mignot, E., Leary, E. B., Zeitzer, J. M.
  2024; 178: 111606
- **PERILS OF THE NIGHTTIME: IMPACT OF BEHAVIORAL TIMING AND PREFERENCE ON MENTAL AND PHYSICAL HEALTH**
  Zeitzer, J., Lok, R., Weed, L., Winer, J.

OXFORD UNIV PRESS INC.2023

- **Brief structured respiration practices enhance mood and reduce physiological arousal.** *Cell reports. Medicine*
  Balban, M. Y., Neri, E., Kogon, M. M., Weed, L., Nouriani, B., Jo, B., Holl, G., Zeitzer, J. M., Spiegel, D., Huberman, A. D.
  2023: 100895
- **The Impact of Missing Data and Imputation Methods on the Analysis of 24-Hour Activity Patterns.** *Clocks & sleep*
  Weed, L., Lok, R., Chawra, D., Zeitzer, J.
  2022; 4 (4): 497-507
- **SLEEP-WAKE STABILITY AND VARIABILITY IN THE MIDDLE-AGED ADULT POPULATION: A UK BIOBANK STUDY**
  Lok, R., Weed, L., Chawra, D., Winer, J., Zeitzer, J.
  OXFORD UNIV PRESS INC.2022: A73-A74
- **Gait instability and estimated core temperature predict exertional heat stroke** *BRITISH JOURNAL OF SPORTS MEDICINE*
  Buller, M., Fellin, R., Bursey, M., Galer, M., Atkinson, E., Beidleman, B. A., Marcello, M. J., Driver, K., Mesite, T., Seay, J., Weed, L., Telfer, B., King, et al
  2022
- **A Preliminary Investigation of the Effects of Obstacle Negotiation and Turning on Gait Variability in Adults with Multiple Sclerosis** *SENSORS*
  Weed, L., Little, C., Kasser, S. L., McGinnis, R. S.
  2021; 21 (17)
- **Estimating Sedentary Breathing Rate from Chest-Worn Accelerometry From Free-Living Data**
  Telfer, B. A., Williamson, J. R., Weed, L., Bursey, M., Frazee, R., Galer, M., Moore, C., Buller, M., Friedl, K. E., IEEE
  IEEE.2020: 4636-4639

PRESENTATIONS

- Sleep Detection and Disturbance Characterization from Chest Accelerometer for Multiple Sclerosis - Biomedical Engineering Society (October 2020)
- Implementing High Intensity Gait Training to Improve Recovery Following Stroke Using Knowledge Translation - APTA CSM 2020 (2020)
- Characterizing Marching Gait Parameters in the Field During Load Carriage Using a Shank-Borne Sensor - ASB/ISB 2019 (August 2019)
- Pedestrian Movement Tracking Using Adaptive Zero-Velocity Updates From Shank IMU - ASB/ISB 2019 (8/1/2020)
- Comparison of Raw Accelerometry from Four Research-Grade Devices - ICAMPAM (June 2019)
- Transitioning Assessments from the Clinic to Daily Life: Exploring Sit-to-Stand Transition Rates As a Means for Assessing Symptom Fluctuation - ACTRIMS (2019)
- Wearable Sensor-Based Characterization of Gait Biomechanics in Persons with Multiple Sclerosis: Comparing in-Lab and Daily life Observations - ACTRIMS (2019)
- Gait Kinematics and Muscle Activity from Wearable Sensors Associated with Disability in Persons with Multiple Sclerosis - BMES 2018 (October 2018)
- Open-Source Wearable Sensor Based Method Feasible for Tracking Steps in Patients Recovering from Stroke - BMES 2018 (October 2018)
- Effect of EMS Loading Configuration On Stair Ascent and Descent Biomechanics Using a Kalman Filter and Wearable Inertial Sensors - BMES 2018 (October 2018)
- Validation of GaitAnalysisPro App for 10m Walk Test - BMES 2017 (10/1/2017)