

Esben Høegholm Lykke

Tjørnevej 63, 7442 Engesvang
✉ sesben@hotmail.com ☎ +45 50482594 🌐 [esbenlykke](https://github.com/esbenlykke) 🌐 esbenlykke.github.io/

Summary

Data-driven professional with a strong background in applied machine learning and epidemiology. Specialized in analyzing accelerometer data to classify sleep patterns. Published author with a rich background in both research and teaching, especially in data science for health applications using R and Python.

Education

PhD in Applied Machine Learning in Epidemiology, University of Southern Denmark 2023

My work primarily involved using machine learning methodologies to analyze accelerometer data, aiming to detect and classify sleep patterns. Additionally, my research also explored manual annotations and the nuances of non-wear detection in accelerometry recordings.

MSc in Sports Science, Epidemiology, Aarhus University 2017

My master thesis, "Unprompted Vigorous Physical Activity is Associated with Higher Levels of Subsequent Sedentary Behaviour in Participants with Low Cardiorespiratory Fitness: A Cross-sectional Study," was later published.

BSc in Sports Science, Exercise Physiology, Aarhus University 2014

Bachelor thesis: "Physiological Adaptations to Plyometric Training - a Literature Review"

Relevant Experience

Research Assistant, University of Southern Denmark 2019—2020

Engaged in systematic reviews as part of the INTERLIVES consortium, gaining deep knowledge of comprehensive literature review methodologies. Authored two papers, one as co-first author,

Research Assistant, Aarhus University 2018—2019

Under the supervision of Professor Kristian Overgaard, I analyzed accelerometer data and first-authored two publications.

Teaching Experience

Data Science Skills for Health Researchers Using R and the Tidyverse | PhD course 2022—2023

Participated in the course's design and delivery. My role was supervising students' end-to-end projects, ensuring practical application of data skills from importing to advanced analysis.

Data Science in Health Science | MSc course 2022—2023

Instructed foundational data science methods in health and physical activity contexts. Also served as an oral exam censor.

Applied Statistics | BSc course 2020—2022

Instructed on key statistical concepts by hands-on R usage for data analysis.

Project Management with External Partner | BSc course 2020

Supervisor and examiner role.

Public health projects in practice | BSc course 2020

Supervisor and examiner role.

Publications

1. Lykke, E. H., Schmidt-Persson, J., Sørensen, S. O., Grøntved, A. & Brønd, S. J. C. [Improving sleep quality estimation in children and adolescents: A comparative study of machine learning and deep learning techniques utilizing free-living accelerometer data from thigh-worn devices and EEG-based sleep tracking.](#) (In preparation).
2. Skovgaard, E. L. et al. [Generalizability and performance of methods to detect non-wear with free-living accelerometer recordings.](#) *Scientific Reports* **13**, 2496 (2023).
3. Skovgaard, E. L., Pedersen, J., Møller, N. C., Grøntved, A. & Brønd, J. C. [Manual Annotation of Time in Bed Using Free-Living Recordings of Accelerometry Data.](#) *Sensors (Basel, Switzerland)* **21**, 8442 (2021).
4. Pedersen, K. K. et al. [The Applicability of Thigh-Worn vs. Hip-Worn ActiGraph Accelerometers During Walking and Running.](#) *Journal for the Measurement of Physical Behaviour* **2**, 209–217 (2019).
5. Skovgaard, E. L., Obilling, K., Maindal, H. T., Rasmussen, C. & Overgaard, K. [Unprompted vigorous physical activity is associated with higher levels of subsequent sedentary behaviour in participants with low cardiorespiratory fitness: A cross-sectional study.](#) *European Journal of Sport Science* **19**, 1004–1013 (2019).
6. Johnston, W. et al. [Recommendations for determining the validity of consumer wearable and smartphone step count: Expert statement and checklist of the INTERLIVE network.](#) *British Journal of Sports Medicine* **55**, 780–793 (2021).
7. Mühlen, J. M. et al. [Recommendations for determining the validity of consumer wearable heart rate devices: Expert statement and checklist of the INTERLIVE Network.](#) *British Journal of Sports Medicine* **55**, 767–779 (2021).

NB. References are available upon request.