

Wearable Gait Tracking for Clinical Rehabilitation



Team:

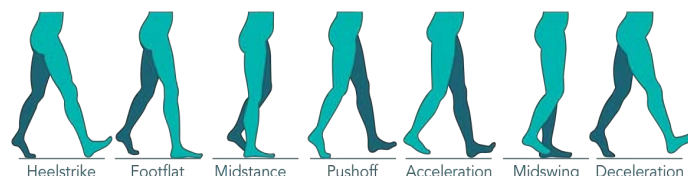
Anisha Basu, Hayley Boyd, Ross Schneider

Advisors:

Andrew Ekelem, Juan Rodriguez
(*Evolution Devices, Inc.*)

THE PROBLEM

Currently, physicians can't reliably diagnose/track gait impairment without motion tracking equipment. Modern gait tracking systems can be expensive and immobile which has limited their availability in rehabilitation settings and reduces patient accessibility.



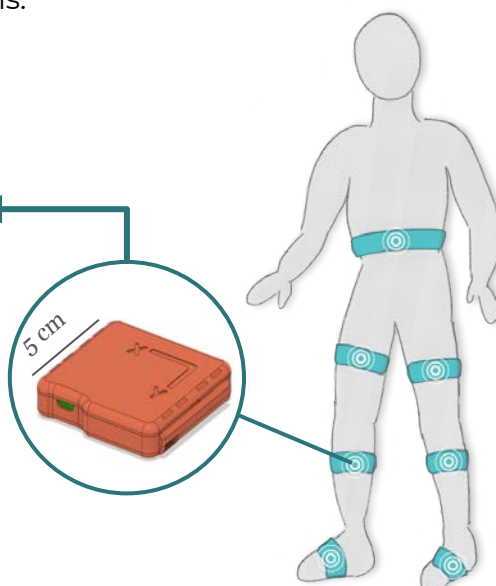
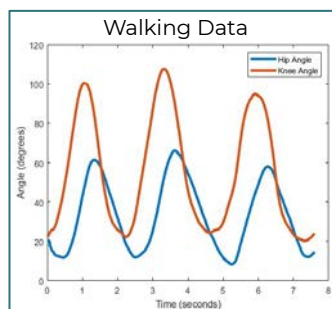
THE BIG PICTURE

Gait impairment can lead to, or result from a fall injury, reducing an individual's mobility. Falls are the leading cause of trauma-related hospital admission among older adults, costing a total of \$50 billion in 2015². Other major causes of gait impairment include stroke and neurodegenerative conditions. With motion-tracking technology, rehabilitation therapies and treatments can be tailored to each individual by quantifying unique, personalized walking patterns.

1/3 OF OLDER AMERICANS EXPERIENCE GAIT IMPAIRMENT ¹

OUR OBJECTIVE

Our solution, *GaitTrac*, provides wireless, real-time gait analysis for clinical gait diagnosis through seven custom motion sensors. Motion sensors on the pelvis, thighs, shins, and feet, capture data to create individualized walking patterns. Our affordable, portable system will be able to reach more mobility-restricted individuals and gather personalized gait data, paving the way for better impairment diagnosis to aid rehabilitation and treatment, as well as improving the efficacy of current assistive systems.



GaitTrac

7 Comfortable Modules

Clinical Accuracy

Less than \$1,000

40 Hz Real-time Sampling Rate

[1] Mahlknecht, Philipp, et al. "Prevalence and Burden of Gait Disorders in Elderly Men and Women Aged 60-97 Years: a Population-Based Study." *PLoS One*, Public Library of Science, 24 July 2013, www.ncbi.nlm.nih.gov/pmc/articles/PMC3722115/.
[2] "Falls Prevention Facts." *NCOA*, 4 June 2018, www.ncoa.org/news/resources-for-reporters/get-the-facts/falls-prevention-facts/.