

# Gait reveals mood, energy, fatigue levels

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Credit: Clarkson University

Can you tell how energetic or fatigued a person is, just by looking at how they walk? That's what Ali Boolani, Associate Professor of Physical Therapy in the Lewis School of Health Sciences at Clarkson University, and Shafique Chaudhry, Assistant Professor in the David Reh School of Business and their team wanted to know.

They asked 126 participants to self-report their current moods and then had them walk around a 6-meter track in Boolani's lab wearing seven sensors on their bodies. Then, using the data from the sensors and using [machine learning](#) they accurately identified how energetic (88.4% accuracy) and fatigued (88.6% accuracy) the participants felt.

"Based on this preliminary work, we can identify feelings of energy and fatigue on a spectrum (whether someone is low or high energy). This is very exciting work because what our current models find is in line with our previous work that people who are [low energy](#) walk as if they're at a higher risk for trips or falls, while people who are low fatigue just slow down and walk more carefully," Boolani said.

Boolani and Masudul Imtiaz, an Assistant Professor of Electrical and Computer Engineering at Clarkson are now working to develop their own [sensors](#) to identify feelings of energy and fatigue in people.

Boolani, Chaudhry and post-doctoral fellows in Boolani's lab are also currently collecting walking gait data in people to see if they can create machine learning models to identify the intensity of changes in feelings of energy and [fatigue](#) over the course of a 30-minute walk.

The study is published in *Applied Sciences*.

**More information:** Ahmed M. Kadry et al, Using Machine Learning to Identify Feelings of Energy and Fatigue in Single-Task Walking Gait: An Exploratory Study, *Applied Sciences* (2022). [DOI: 10.3390/app12063083](#)

Provided by Clarkson University

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