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SHS professor setting the bar for balance research

The flagship journal of the American Physical Therapy Association, [Physical Therapy](#), has published an article on balance assessment by [Daniel J. Goble, Ph.D.](#), associate professor of [Exercise Science](#) in the [School of Health Sciences](#) at Oakland University.

The study provides normative data on a balance measure known as “postural sway” collected from a record 16,357 people ranging in age from five to 100 years old. This sample is more than twice as large as the previous high of 7,973 published over a decade ago.

Postural sway is a biomechanical measure of balance based on how much the body moves back and forth when trying to stand still. Postural sway was measured in this study using the Balance Tracking System (BTrackS), a low-cost force plate device created by Goble five years ago. This device measures postural sway from forces sensed by the plate when an individual stands on it for four 20-second trials with eyes closed.

“It is our hope that these normative results will improve the clinical outcomes of hundreds of health professionals who are regularly using the BTrackS Balance Test as a measure of postural sway for balance assessment,” Goble said.

Postural sway is routinely used by medical professionals in cases such as concussion, brain injury, stroke, spinal cord injuries and other neurological conditions. Increased postural sway is associated with a person’s ability to conduct activities of daily living. In older adults, excessive postural sway can lead to falls, other injuries and a higher rate of needing residential care.

Force plate technology has emerged as one of the most sensitive and objective means of assessing postural sway in a clinical setting. The **BTrackS** force plate device is unique in that it is very portable and the test can be done in a matter of minutes.

“Our data for this study was collected by third-party practitioners with many different backgrounds in more than 50 locations across the United States and Canada,” Goble said. “And, while this is a great start that shows the effectiveness of the testing, we want to continue building the database and growing our sample sizes, while also looking at other subcategories like height and weight.”

In the study, it was found that balance improved from childhood to adulthood and then got progressive worse again starting in the decade of 40s. Women had better balance than men in almost all age groups.

Goble and research colleague [Harsimran S. Baweja](#) from San Diego State University, along with others helping collect data, want their work to impact clinical care so doctors and physical therapists can make the best decisions for their patients in at-risk populations. It is their goal to move this testing from the lab bench to the bedside and beyond.



Dr. Goble, left, and OU student research assistant Harshan Brar, demonstrate the design and portability of a postural sway test he is using to create the largest database of its kind. The database will help health care providers assess the risk of falls from many different conditions.



Dr. Goble's research is correlating the relationship between postural sway and the risk for falls. In less than five minutes, a person's balance can be measured and they can be assessed for their risk of a fall.

About Physical Therapy journal:

As the leading international journal for research in physical therapy and related fields, PTJ publishes innovative and highly relevant content for both clinicians and scientists and uses a variety of interactive approaches to communicate that content, with the expressed purpose of improving patient care. PTJ is the official scientific journal of the American Physical Therapy Association (APTA). Established in 1921, PTJ has a total circulation of approximately 90,000.

About Oakland University's School of Health Sciences

Oakland University's School of Health Sciences provides an exceptional environment of collaborative, academic and clinical learning that helps transform students into leaders impacting the health needs of our communities in diverse wellness, safety and health-related practices. The School of Health Sciences is passionate about providing students with the best science-based health education, high-quality academic preparation, interdisciplinary teaching and excellence in instruction in the classroom and clinical library.

The Oakland University mission:

Oakland University cultivates the full potential of a diverse and inclusive community. As a public doctoral institution, we impact Michigan and the world through education, research, scholarship and creative activity.