

Which to use: objective measurement or performance test for physical activity?

Jiawei Bai

Johns Hopkins University

E-mail: jbai@jhsph.edu

Abstract: Objective measurement of physical activity has become an important part of many studies that include assessment of human physical function. Accelerometer based wearable devices are the major tool utilized in such studies, because they can be worn on the human body relatively comfortably for an extended period of time 鈥?this enables a rich data collection in the free-living environment for weeks. However, some traditional methods such as performance tests are still used in many applications, because they are well-studied in the literature and often provide more detailed information on some specific function. In this paper, we introduce a series of statistical tools and models to assess and compare, on the same population, what information about the physical function we can get from free-living accelerometry measurement and in-lab performance tests. We used the data from the OUTLET Study of the METRC (Major Extremity Trauma Research Consortium), which aimed to compare 18-month functional outcomes and health related quality of life of patients undergoing salvage versus amputation following severe leg/foot injury.