

Abstract Submitted
for the OSF16 Meeting of
The American Physical Society

The concept of metastability for one-legged standing ULRICH ZURCHER, Physics Dep, Cleveland State University, PAUL SUNG, Physical Therapy Program, Central Michigan State University, NEAL CARR, Physics Dep, Cleveland State University — Standing on one foot has been characterized by a continuum between static equilibrium (standing) and dynamic equilibrium (walking). This suggests that sways of the body are important for a person to maintain the upright position and prevent a fall. We examine the center of pressure (COP) changes with visual input, and find that the character of COP dynamics is different on different time scales: it is random (stochastic) on short time scales $0 < t < 20$ ms, ballistic (deterministic) on intermediate time scales $20 \text{ ms} < t < 200$ ms, and random on long time scales $200 \text{ ms} < t < 25$ s.

Ulrich Zurcher
Physics Dep, Cleveland State University

Date submitted: 01 Sep 2016

Electronic form version 1.4