The effects of concussion on the determinants of gait velocity in community-dwelling men and women

Gait is an essential skill in daily life. Effective gait requires intact brain function and movement control. Attention has been paid to how concussions affect gait in athletes; however, the impact of concussion on the determinants of walking speed (cadence and step length) in community-dwelling adults have not been fully examined. In addition, men and women differentially vary cadence and step length to achieve walking speed and endorse different sets of concussion-related symptoms. Thus, the purpose of this study is to examine the effects of concussions on step length and cadence in community-dwelling men and women. Step length, cadence, gait velocity, and spatial gait variability measures of community-dwelling male and female concussion patients were compared across four different conditions: self-paced, talking, dual task, and maximum-paced. These tasks were chosen to probe potential cognitive and motor contributions to gait. Preliminary analyses reveal that men and women use different strategies to achieve the same gait velocity, and that overall, step length variability is higher in women, regardless of condition or task type. A second study examining the predictors of recovery of gait measures over a 16-week window is ongoing. These analyses represent the first studies exploring the impact of concussion on gait in community dwelling adults. In addition, these findings identify a possible sex effect with respect to impact of concussion on gait.