CONCUSSION HISTORY DOES NOT AFFECT DUAL-TASK GAIT
Oldham JR*, DiFabio MS*, DeWolf RM*, Buckley TA*: University of Delaware, Newark, DE, USA

**Context:** Impairments in postural control are a hallmark occurrence following concussion. A history of multiple concussions has been associated with numerous neurological impairments, but the relationship between concussion history and gait has been minimally examined. A recent investigation demonstrated that any history of previous concussion resulted in an altered gait strategy during a single-task protocol. However, the effect of a dual-task challenge has not been explored. **Objective:** To examine the effect of dual-task challenges on gait parameters in individuals with and without history of concussion. **Design:** Cross-sectional. **Setting:** Research laboratory. **Patients or Other Participants:** 26 NCAA Division I student-athletes: 13 with history of at least 1 or more concussions (Age: 19.7±1.1 years, Height: 69.0±4.8 cm, Weight: 79.0±24.4 kg, Concussion History: 1.3±0.6) and 13 with no self-reported concussion history (Age: 19.6±1.4 years, Height: 69.2±4.6 cm, Weight: 76.5±23.6 kg). **Interventions:** All participants were fitted with three wearable APDM accelerometers (1 on each foot, 1 around the lumbar region) and asked to perform 5 standard gait trials, while simultaneously completing cognitive mini-mental style tasks. A standard gait trial consisted of the participant traversing a 10m walkway, turning, and returning to the original position. Each participant was instructed to begin the cognitive challenge as soon as he or she started walking and continue until returning to the starting line. The order was randomized for each participant. **Main Outcome Measures:** The dependent variables included gait velocity, percentage of gait cycle spent in single support and step variability. Data were recorded from the APDM accelerometers and exported through the Mobility Lab and Mobility Clinic software. An independent sample t-test was used with an alpha level of p≤0.05. **Results:** There was no difference between the no concussion group and the concussion group for gait velocity (1.04±0.17 m/s and 1.09±0.15 m/s respectively, p=0.376), percentage of gait cycle spent in single support (31.95±1.54% and 30.75±3.01% respectively, p=0.415) or step variability (6.08±1.57 cm and 5.55±1.57 cm respectively, p=0.782). **Conclusions:** In this small, preliminary study, there appear to be no significant differences between dual-task gait parameters in student-athletes with and without history of concussion. It is possible the participants were relying on compensatory strategies to maintain gait stability. Future studies should examine individuals with a history of 3 or more concussions, which has demonstrated to be a risk factor in possible long-term impairment. Additionally, possible differences between the specific mini-mental cognitive tasks should be explored. **Word Count:** 394