

Office of Undergraduate Research Symposium – Spring 2024  
Abstract Submission

Title: Neurocognitive Contributors to Gait Initiation in Older Adults

The task of starting walking (termed gait initiation) requires greater postural control than continuous walking. Postural control requires visual, vestibular, and somatosensory inputs. People with Parkinson disease (PD) have difficulty initiating gait and are more dependent on visual input compared to unimpaired older adults (Kitamura, 1993). This suggests the potential for differences between people who have PD and older adults in their cognitive and sensory capacities needed during gait initiation. Assessing older adults is a necessary first step to understand this problem.

The purpose of this study is to evaluate the impact of visual stimuli and cognitive attentional demands during gait initiation in unimpaired older adults. I have measured first step length during baseline (no visual occlusion), partial visual occlusion, full visual occlusion, and extraneous visual stimuli conditions, and single versus dual task scenarios. Differences in participants' first step lengths under the baseline compared to the remaining three visual conditions produced statistically insignificant p-values and no interaction effects were detected. However, the Cohen's d value between the baseline and fully occluded vision conditions revealed a large effect size ( $d=0.73$ ), which may indicate that the fully occluded visual condition is creating a shorter first step compared to baseline that we are just not statistically powered to see. Additional participants to increase the confidence in the findings and further parameters regarding the effect of single versus dual task on gait initiation are necessary.