Assessing Cognitive-Motor Integration in Middle-Aged Athletes: The effect of concussion history & dementia risk

This project will investigate the relationship between dementia risk and concussion history in a physically active, middle-aged adult population. These participants may or may not have one or both of the following: a family history of Alzheimer's (AD) and a history of concussion(s); controls will include older athletes with no history of concussion or family history of dementia. We know from previous work in our lab that those with dementia or concussion history perform poorly when asked to make skilled movements when having to think simultaneously (cognitive-motor integration, CMI). Here we will conduct a cognitive-motor assessment on middle-aged recreational athletes (male and female) between the ages of 30 and 65 using a computer tablet-based task. Data collected will include movement timing and kinematics such as reaction and movement time, path length, accuracy, precision, and number of failed trials. Participants will also complete a questionnaire on various lifestyle factors such as frequency of sport participation and drinking/smoking amount. We predict that those who either have a concussion history and/or family history of dementia will perform poorly when compared to controls, and that this effect will be exacerbated in those individuals with both factors. The data collected will expand current research on rule-based skill assessment that can identify functional CMI impairments before current clinical signs of dementia are observed (or after current signs of concussion resolution are observed). On an exploratory basis, these data will provide insight into lifestyle factors that may affect cognitive-motor integration in middle-aged adults, an ability often important for functioning safely at work and sport.