

## **Caleb Johnson - Abstract**

### ***The Interaction of Fatigue and Load on Reaction Time and Decision-Making During an Affordance-Based Task***

The process by which an athlete is attuned to their affordances for action in a given environment is known as perceptual-motor calibration. However, given that athletes operate in dynamic, fluid environments, they must be able to recalibrate to account for perturbations, such as fatigue or load carriage. **PURPOSE:** To examine the independent and interactive effects of low intensity to fatiguing exercise and load carriage on perceptual-motor calibration **PROCEDURES:** 23 participants (Age (yrs) =  $25.26 \pm 3.26$ ) completed an incremental fatigue protocol, with stages of low, moderate, high, and fatiguing intensities, on two separate occasions (loaded/unloaded). At baseline and the end of every stage, subjects made perceptual-motor judgements for maximal jump distance, and the accuracy of judgements (ACC) and reaction time (RT) were calculated. 2x5 ANOVAs, or nonparametric equivalents, were utilized to test for mean differences in ACC and RT across exercise intensity and load carriage conditions. **RESULTS:** No interaction of exercise intensity and load carriage was detected, or main effect of load carriage. A main, quadratic effect of exercise intensity was detected on RT ( $F = 18.587$ ,  $p < 0.001$ ), with RTs decreasing through the moderate stage (Mean Difference (ms) =  $-38.25$ ) and increasing through post-fatigue (Mean Difference (ms) =  $38.817$ ), however no effect was detected on ACC. **CONCLUSIONS:** The results indicate that exercise has a significant effect on perceptual-motor calibration, with improvements through moderate intensity exercise, and decrements with higher intensities, necessitating recalibration. However, load carriage appears to not have a significant impact on perceptual-motor calibration.