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Does Fatiguing Exercise Influence Performance on an Affordance-Based Action Boundary Task?

Aaron M. Sinnott, Mita Lovalekar, Elizabeth Z. Nagle, FACSM, Anne Z. Beethe, Takashi Nagai, Bradley C. Nindl, FACSM, Christopher Connaboy. University of Pittsburgh, Pittsburgh, PA

Perception-action coupling describes the dynamic interaction between the person and their environment. External and internal stimuli provide valuable information regarding the opportunities for action, or affordances, which underlie functional goal-directed movement. However, systemic stressors (sleep deprivation, anxiety, brain injury, etc.) affect perceived affordances in animal-environment systems. Little is known about the influence of exertional fatigue on an affordance-based task. **PURPOSE:** Examine the effect of fatigue on the accuracy of affordance-based action boundary accuracy task after a maximal performance swim. **METHODS:** 13 competitive swimmers completed a baseline (BL) evaluation of the Perception-Action Couple Test (PACT) prior to a maximal 500m swim test (for time) and 30 sec maximum effort tethered swim test (TST). Participants completed a PACT evaluation 10 (Post Fatigue 1-PF1) and 30 (Post Fatigue 2-PF2) minutes after protocol. After testing for normality, a within-subjects repeated measure ANOVA was conducted across all time-points (BL, PF1, and PF2) for movement time (MT), initiation time (IT), reaction time (RT), and % accuracy in PACT program scores. **RESULTS:** Six females (27.3 ± 7.2 y.o.) and three males (26.6 ± 3.8 y.o.) completed all assessments. There was no statistically significant difference between BL and PF1 or PF2 time-points for movement time, initiation time, reaction time, or % accuracy. ($p > .05$). However, a trend toward decreased % accuracy near the affordance-action boundary was noted. **CONCLUSIONS:** An affordance-based task is not influenced by exertional fatigue 10 or 30 minutes following a maximal swimming bout. Sensorimotor alterations experienced from exertional fatigue can be influenced by a variety of internal and external factors. The interrelationship between fatigue effects (magnitude and duration) and rest duration on perception-action assessments warrant further consideration. Due to the ambiguous trend for performance alterations at the action-boundary threshold, future studies should continue to investigate internal and external factors that influence affordance-based tasks.