

INFLUENCES OF EXERCISE ON INFORMATION PROCESSING IN DIFFERENT SENSORY MODALITIES

Yagi, Y., Estes, K.M.*, Coburn, K.L.* (Seinan Jogakuin Junior College, Kitakyushu, Fukuoka Japan, *Mercer University School of Medicine Macon, GA USA)

Purpose: Reaction time (RT) during exercise has been reported to decrease until middle exercise, suggesting an enhancement of information processing. This study examined the changes in several measures of information processing (P300, RT, accuracy) during exercise, and their relation to visual or auditory sensory modalities. **Methods:** Twenty four healthy volunteers (mean age 20±2 years) performed “oddball” tasks using auditory stimuli (AS) and visual stimuli (VS) during resting control periods (CP), exercise periods (EP) and recovery periods (RP). EEG, accuracy, and RT to target stimuli were analyzed. **Results:** Compared to CP and RP (which did not differ from each other), RTs were significantly shortened during the EP (AS 96.1%; VS 92.2%). During EP, RTs to VS were also significantly shorter than to AS. The oddball task error rate during EP was significantly increased with AS (98.7%) but not with VS (99.8%). P300 latencies were significantly shortened during EP (AS 95.9%; VS 96.0%) and P300 amplitudes were significantly decreased during EP (AS 75.0%; VS 77.8%). **Conclusions:** Moderate aerobic exercise decreased oddball RTs, but simultaneously decreased P300 latencies and amplitudes, and increased errors. Taken together, these results suggest reduction rather than enhancement of information processing by exercise. Since RTs became shorter than P300 latencies during EP, these results may be attributed not to a decrease in attention but to changes in subject's attitude to respond before full evaluation under exercise, and it was enhanced by low error visual task.

Presented at the 9th World Congress of the International Society for Brain Electromagnetic Topography, New Orleans, LA USA

Yagi, Y., Estes, K.M., & Coburn, K.L. (1998). Influences of exercise on information processing in different sensory modalities. *Brain Topography*, 11(1): 81-82 (abstract).

Abstract published in: Brain Topography