

The Effects of Visuospatial Environment on Endurance Treadmill Running Performance, RPE, and Heart Rate

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ABSTRACT

The psychobiological model of endurance exercise suggests that endurance exercise performance is determined primarily by perception of effort. Previous research has shown that inducing mental and physical fatigue affects rating of perceived exertion (RPE), ultimately affecting endurance performance. However, there is limited literature describing the effect of visual stimuli on RPE. In particular, effects of visuospatial environment, one that elicits thought processes involving visual and spatial awareness, have not been investigated. **PURPOSE:** The purpose of this study was to investigate the effect of visuospatial environment on endurance exercise performance, RPE, and heart rate (HR). **METHODS:** 22 participants completed a self-paced 20-minute treadmill run in an open visuospatial environment (treadmill in front of an open window) and a closed visuospatial environment (treadmill surrounded by privacy curtains). A randomized cross-over design was used and each participant experienced each condition. The main outcome measures were total distance covered during the 20-minute trial and RPE, which was measured every 2 minutes. Additionally, HR was recorded throughout the trial. **RESULTS:** Total distance traveled was similar between groups (3.49 (0.51) km and 3.44 (0.60) km for open and closed conditions, respectively) with no differences between groups in RPE or HR ($p > 0.05$). This suggests that open and closed visuospatial environments are not influencing factors on endurance performance, RPE, and HR. Further research is required to investigate other factors that contribute to perceived effort during endurance exercise. **CONCLUSION:** Results suggest that visuospatial environment has no effect on perception or performance during endurance exercise on a motorized treadmill. Future studies should consider using a non-motorized endurance test, such as a stationary bike or non-motorized treadmill. Additionally, unwanted visual stimuli should be limited.