

## **Effects of Diverting Activities on Recovery from Repeated Maximum Voluntary Contractions**

MICHEAL J. LUERA, MATT S. STOCK, JOCAROL E. SHIELDS, and IBRAHIM K. MUNAYER

Human Performance Laboratory; Texas Tech University, Lubbock, TX

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### ABSTRACT

Previous investigations have demonstrated that diverting activities (e.g., contralateral exercise and pinching one's fingers together) can minimize the severity of muscle fatigue that occurs during exercise. In addition to their ability to resist fatigue during exercise, diverting activities may help subjects recover between work bouts. The purpose of this study was to examine the effects of mental and physical diverting activities on recovery from fatiguing isometric muscle actions. On three separate occasions, twelve men (mean  $\pm$  SD age =  $22 \pm 1$  years) and nine women (age =  $22 \pm 2$  years) performed ten repeated, ten-second isometric maximum voluntary contractions (MVCs) of the dominant leg extensors with ten seconds of rest between each attempt (i.e., ten seconds "on" ten seconds "off"). Following this fatiguing protocol, the subjects performed math problems (mental diverting activity), five, 20-second isometric muscle actions with the non-dominant leg extensors at a force corresponding to 50% MVC (physical diverting activity), or rested quietly (control). Immediately following this intervention period, the subjects performed a final three-second MVC, which assessed how well the leg extensors recovered from the fatiguing protocol (Post-Recovery MVC). These three data collection trials were randomly performed, and separated by at least 48 hours of rest. A two-way (time [Pre-Fatigue MVC, MVC #1-10, Post-Fatigue MVC, Post-Recovery MVC]  $\times$  intervention [math problems, contralateral, and control]) repeated measures analysis of variance was used to examine the isometric force data. The mean  $\pm$  SD Post-Recovery MVC values were as follows: mental diverting activities =  $765 \pm 210$  N; physical diverting activities =  $797 \pm 235$  N; control =  $790 \pm 258$  N. There was no significant time  $\times$  intervention interaction (partial eta squared = .072), no main effect for intervention, but there was a main effect for time. The marginal mean pairwise comparisons indicated: Pre-Fatigue MVC > MVC#1 - Post-Fatigue MVC; MVC #4 - Post-Fatigue MVC < Post-Recovery MVC. In contrast to the results from previous studies, our results indicated that performing mental and physical diverting activities did not help the subjects recover from fatigue.