

## **Unilateral Fatigue Differences between Novice and Experienced Resistance Trainers**

Francesca C. Crespo, Jared Fortunato, Jared A. Martz, Melissa A. Whidden. West Chester University, West Chester, PA

Neuromuscular fatigue (NF) can be identified as a failure to maintain proper muscle force essential to completing the task at hand. The effects resulting from NF differ between bilateral and unilateral tasks and limb dominance probably plays a role in unilateral NF. **PURPOSE:** The purpose of this study was to analyze the unilateral NF differences between dominant and non-dominant limbs of novice and experienced exercisers. **METHODS:** Ten college age men (age =  $21.70 \pm 1.70$  years) were separated into two groups: novice (N=5), less than 6 months of experience, and experienced (N=5), 18 months or more resistance training experience. Muscle activity of the clavicular head (CH) and sternal head (SH) of the pectoralis major as well as the rectus femoris (RF) and vastus lateralis (VL) were examined through surface electromyography (sEMG). Subjects were tested for one repetition max (1RM), fatigued at 60% of 1RM using a dynamic fatiguing protocol, then retested at 1RM value. **RESULTS:** No significant differences ( $P \leq 0.05$ ) were observed across the two conditions likely due to the small sample sizes in each group. However, our data show there may be differences in muscle activity between groups. In the dominant leg RF, experienced individuals displayed an increase of peak  $\mu\text{V}$  ( $102.73 \pm 239.18 \mu\text{V}$ ) while novice individuals displayed a decrease ( $222.57 \pm 282.31 \mu\text{V}$ ). Additionally, novice individuals displayed a decrease of average  $\mu\text{V}$  ( $91.32 \pm 97.15 \mu\text{V}$ ) in the SH of the ND limb whereas, experienced individuals displayed an increase ( $10.30 \pm 109.06 \mu\text{V}$ ). **CONCLUSIONS:** Experienced resistance trainers dominant limbs appear to display different neuromuscular activation patterns than novice trainers. With resistance training, fatigue effects may be handled differently within the muscle. These results suggest that different muscle activation patterns may develop over time with training compensating for fatigue.