

Effects of Eccentric Muscle Work on Acute and Delayed Torque and Force Generation

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Purpose: The purpose of this study was to determine if eccentric repetitions performed at the end of a lifting session would affect muscle torque production over 48 h of recovery. **Methods:** Four resistance trained male subjects (22 ± 2.8 yrs.; 84.6 ± 10.2 kg; 182.87 ± 4.5 cm) volunteered for this pilot study. Following orientation to the isokinetic dynamometer, each participant completed two upper-extremity training sessions (one serving as control (CON)), separated by a minimum of two weeks. Each testing day consisted of 6 lifts, with 3 sets per lift performed at approximately 70-80% 1-RM. On the Eccentric (ECC) testing day subjects also performed approximately 5 eccentric-only repetitions at 100% 1-RM after the last set for each exercise. Torque and muscle soreness were assessed prior to each testing day, upon completion of the lifting session and 24 and 48 h later. Torque was assessed at 60° , 120° and $180^\circ/s$. **Results:** Biceps soreness was significantly elevated ($p < .05$) at 24 and 48 h for ECC vs. CON. However, no significant interactions were present for torque measures of the right arm at any velocity. **Conclusion:** Limited eccentric repetitions do not appear to adversely affect acute or delayed torque recovery.

Torque @ $60^\circ/s$	Baseline	Post-ex	24 h post	48 h post
CON (N*m)	60.25 ± 4.6	51.25 ± 1.8	64.5 ± 5.2	69.5 ± 4.9
ECC (N*m)	68.75 ± 3.8	53.75 ± 1.2	60.25 ± 3.7	64.25 ± 4.3
Soreness CON	$1.42 \pm .82$	$2.45 \pm .69$	$1.53 \pm .59$	$1.58 \pm .57$
Soreness ECC	$0.95 \pm .52$	$1.75 \pm .81$	$4.10 \pm .98^*$	$4.85 \pm 1.25^*$

*Different from baseline and different from CON.