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°/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°/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±.82	2.45±.69	1.53±.59	1.58±.57
Soreness ECC	0.95±.52	1.75±.81	4.10±.98*	4.85±1.25*

*Different from baseline and different from CON.