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The Effects of Accentuated Eccentric Loading on Velocity and Muscle Activation in the Bench Press

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Accentuated eccentric loading (AEL) is a resistance training method that has been proposed to positively influence adaptations during tasks utilizing the stretch shortening cycle. However, it remains unclear if optimal concentric loading schemes exist for AEL protocols. **PURPOSE:** To evaluate the effects of AEL on concentric velocity and muscle activation using low (30% 1-repetition maximum [1RM]) and high (80% 1RM) concentric loads with AEL in comparison to traditional loading (T) in the bench press exercise. **METHODS:** Twelve resistance-trained men (age: 26 ± 6 yrs; 1RM: 134 ± 33 kg) performed two repetitions with full recovery for the loading conditions of 30T (30% 1RM during the concentric and eccentric phases), 30AEL (100% 1RM during the eccentric phase, 30% 1RM during the concentric phase), 80T (80% 1RM during the concentric and eccentric phases), and 80AEL (100% 1RM during the eccentric phase, 80% 1RM during the concentric phase). The differing loads during the concentric and eccentric phases of the AEL conditions were applied using mechanical weight releasers. Concentric barbell velocity was measured using a linear position transducer and the EMG activity of the pectoralis major and triceps brachii muscles during the concentric phase of the lifts were recorded. **RESULTS:** The mean concentric velocity was statistically greater in the high concentric loading conditions (mean difference: 0.57 m/s, 95% confidence interval [CI]: 0.47 – 0.67 m/s, $p < .0001$). AEL resulted in a reduction in velocity compared to traditional loading (mean difference: 0.04 m/s, 95% CI: 0.01 – 0.08 m/s, $p < .0001$). Muscle activity in the high concentric load conditions was statistically greater than the low concentric load conditions (mean difference: 143 μ V, 95% CI: 84 – 202 μ V, $p < .0001$). There were no other statistically significant main effects or interactions ($p > 0.05$). **CONCLUSION:** AEL resulted in a small decrease in mean concentric velocity but did not affect concentric muscle activation during repetitions of the bench press performed with either low or high concentric loads.