

## Effect of Depth Jumps and Back Squats on Eliciting Postactivation Potentiation for a 40-meter Sprint

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**PURPOSE:** Data show that heavy preload stimuli preceding a sprint can improve performance by eliciting postactivation potentiation (PAP), an increased intramuscular sensitivity to calcium that enhances cross-bridge cycling, thereby acutely enhancing force production and strength. The aim of this study was to compare depth jumps (DJ) to back squats (S) as a means to elicit PAP in college aged female rowers. **METHODS:** Twenty Division III collegiate female athletes, whose  $X \pm SD$  for age, height, weight, and  $VO_2$  Max were, respectively,  $18.9 \pm 0.9y$ ,  $1.5 \pm 0.05m$ ,  $60.7 \pm 21.4kg$  and  $42.8 \pm 4.4ml.kg^{-1}.min^{-1}$ , completed a 40 m sprint timed at 10 m, 20 m, and 40 m with a timing system. Subjects were randomly divided into either the DJ or S group. Subsequently, their one repetition maximum (1 RM) for the BS or DJ was measured. One week later, subjects completed a 40m sprint, and then three repetitions at 90% of their 1RM for BS or DJ; after 7 min of active rest, they completed another 40m sprint. A dynamic warm-up and active cool down preceded and followed each testing session. Data were analyzed with three 2x2 repeated measures ANOVA. **RESULTS:** Both conditions significantly increased sprint time at 40m; BS 20m sprint time was also slower. **CONCLUSION:** The data show that three repetitions at 90% of 1RM for BS or DJ did not elicit PAP in female college rowers. These findings may be related to sex, load, training incompatibility, or sprinting proficiency in this subject population.

*Mean Sprint Times (s) by Group*

	Depth Jump (n=10)			Squat (n= 10)		
	10m	20m	40m	10m	20m	40m
Pre	$2.06 \pm 0.09$	$3.62 \pm 0.12$	$6.55 \pm 0.27$	$2.10 \pm 0.09$	$3.62 \pm 0.14$	$6.61 \pm 0.32$
Post	$2.09 \pm 0.11$	$3.68 \pm 0.13$	$6.66 \pm 0.27^*$	$2.10 \pm 0.09$	$3.66 \pm 0.17^*$	$6.67 \pm 0.36^*$

*Note.* \*  $p < 0.05$

