Post Activation Potentiation of Back Squat and Trap Bar Deadlift on Acute Sprint Performance

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PURPOSE: We investigated the ability of back squat (BS) and trap bar deadlift (TBD) to elicit post activation potentiation (PAP) and hence improve 40m sprint performance in college age female rowers. **METHODS:** Twenty division III collegiate female rowers, whose $\overline{X} \pm SD$ for age, height, weight, and VO_2 Max were 19.2 ± 1.1 y, 1.7 ± 0.06 m, 67.4 ± 6.8 kg and 42.5 ± 3.9 ml·kg^{-1}·min^{-1}, completed a 40m sprint timed at 10m, 20m, and 40m with a timing system. Based on sprint times, subjects were divided into two groups: BS and TBD. Subsequently, we determined their one repetition maximum (1 RM) for the BS and TBD. One week later, subjects completed a 40m sprint, and then three repetitions at 90% of their 1RM for BS or TBD; after 7 min of active rest, they completed another 40m sprint. A dynamic warm-up and active cool down preceded and followed all testing sessions. Data were analyzed with three 2x2 repeated measures ANOVA. **RESULTS:** We found both conditions significantly increased 20m and 40m sprint times as shown below:

Sprint Times (s) by Group

	Trap Bar Dead Lift (n=10)			Back Squat (n = 10)		
	10m	20m	40m	10m	20m	40m
Pre	2.06 ± 0.11	3.53 ± 0.19	6.48 ± 0.44	2.10 ± 0.09	3.62 ± 0.14	6.61 ± 0.32
Post	2.07 ± 0.11	3.60 ± 0.19*	6.57 ± 0.42*	2.10 ± 0.09	3.66 ± 0.17*	6.67 ± 0.36*

Note. *= $p < 0.05$

CONCLUSION: The data show that three repetitions at 90% of 1RM for BS or TBD did not elicit PAP in female college rowers. These findings may be related to sex, load, training incompatibility, and sprinting proficiency in this subject population.