

The Acute Effects of Different Squat Intensities on Vertical Jump Performance

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ABSTRACT

Post activation potentiation (PAP) is defined as a short-term improvement in performance as a result of using a resistance exercise. The phenomenon of PAP has been shown to acutely increase athletic performance with back squats as an effective modality. **PURPOSE:** This study investigated acute effects of different back squat intensities on the countermovement vertical jump (CMJ). **METHODS:** Participants were 13 to 18-yr-old healthy male (n=8) and female (n=3) who participated in regular resistance training for at least 6 months and have played in a University Interscholastic League (UIL) within the past 6 months. One Repetition Maximum (1-RM) was measured within 4 weeks before testing and all participants abstained from strenuous exercise for 48 hours prior to testing. Each participant performed a standard warm-up for 5 minutes and measured a baseline (PRE) CMJ by a Vertec®. One minute of resting interval time was provided after PRE test. The CMJ performed by a randomized counterbalanced order with repeated measures under five different barbell back squat trials: 70, 75, 80, 85, and 90% of 1-RM. Between each barbell back squat trial and CMJ test, the participants rested for one minute. Peak power values were estimated by equation (Harman Formula): Peak power (W) = 61.9 · jump height (cm) + 36.0 · body mass (kg) + 1,822. All Data were represented mean and standard deviation and analyzed by one-way ANOVA with repeated measures. **RESULTS:** There was no significant difference at 70, 85, and 90% of 1-RM. The CMJ increased significantly in 1-RM 75% (PRE: 51.3 ± 13.9 cm, 75%: 52.8 ± 13.6 cm, p=.036). At 1-RM 80%, increasing tendency was shown (PRE: 51.3 ± 13.9 cm, 80%: 52.8 ± 14.5 cm, p=.069). **CONCLUSION:** The results may indicate that barbell back squat at 75-80% of 1-RM can improve a CMJ performance acutely in adolescence who plays in UIL level.