



Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 5th - 6th, 2021
Conference Proceedings
International Journal of Exercise Science, Issue 9, Volume 10



Inter-set Voluntary Hyperventilation-aided Recovery Does Not Improve Bench Press and Squat in Recreationally Trained Individuals

Dalton W. Jones, Isaac J. Thrasher, Madison N. Faulkner, Elaine M. Robertson, Philip J. Prins, Gary L. Welton, Dana L. Ault, Jeffrey D. Buxton. Grove City College, Grove City, PA

Inter-set voluntary hyperventilation (VH) aided recovery has recently been shown to improve reps to failure of bench press and leg press at 80% of 1RM in advanced athletes. It is unknown if VH would be ergogenic at other relative intensities using recreationally trained individuals. **PURPOSE:** To examine the effects of VH between sets of bench press (BP) and squat (SQ) at 70 and 90% 1RM on repetitions to failure, power, bar velocity, blood lactate, session RPE (sRPE), and muscle oxygen saturation (SmO₂). **METHODS:** Fifteen recreationally trained (2.92 ± 2.18 yrs. of resistance training experience, 97.27 ± 20.69 kg 1RM BP, 131.06 ± 22.69 kg 1RM SQ) college-aged males (20.27 ± 1.39 yrs., 182.40 ± 7.42 cm, 82.23 ± 10.84 kg) participated in a randomized crossover trial in which they performed 3 sets of BP and SQ to failure at 70 and 90% 1RM on separate days with normal breathing (CON) or 30 sec of VH (60 breaths/min) during inter-set rest periods. Statistical significance was set *a priori* at $p \leq 0.05$. **RESULTS:** There were no significant differences between conditions for repetitions, power, velocity and sRPE ($p > 0.05$) at either intensity of BP or SQ. VH resulted in a slight, but significant, attenuation of blood lactate increase from sets 2 and 3 of SQ at both intensities ($+ 0.56$ vs. $+1.08$ mmol at 70%, $+ 0.25$ vs. $+ 1.16$ mmol at 90%, $p = 0.037$) compared to CON. There was a significant condition and intensity interaction for SmO₂ of the pectoralis ($p = 0.034$) with VH producing a higher SmO₂ at 90% 1RM (78.26 ± 12.02 vs. 71.30 ± 13.03) and a lower SmO₂ at 70% 1RM (72.32 ± 14.63 vs. 76.11 ± 10.21) than the CON. **CONCLUSION:** Voluntary hyperventilation did not produce an ergogenic effect in recreationally trained individuals which, when considering current evidence, suggests other factors including training experience may influence the effectiveness of VH.