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Original Research

Effect of Time-of-Day-Specific Strength Training on Muscular Hypertrophy in Men

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Abstract

Sedliak, M, Finni, T, Cheng, S, Lind, M, and Häkkinen, K. Effect of time-of-day-specific strength training on muscular hypertrophy in men. *J Strength Cond Res* 23(9): 2451-2457, 2009-The purpose of the present study was to examine effects of time-of-day-specific strength training on muscle hypertrophy and maximal strength in men. A training group underwent a 10-week preparatory training (wk 0-wk 10) scheduled between 17:00 and 19:00 hours. Thereafter, the subjects were randomized either to a morning or afternoon training group. They continued with a 10-week time-of-day-specific training (wk 11-wk 20) with training times between 07:00 and 09:00 hours and 17:00 and 19:00 hours in the morning group and afternoon groups, respectively. A control group did not train but was tested at all occasions. Quadriceps femoris (QF) cross-sectional areas (CSA) and volume were obtained by magnetic resonance imaging scan at week 10 and 20. Maximum voluntary isometric strength during unilateral knee extensions and half-squat 1 repetition maximum (1RM) were tested at week 0, 10, and 20 at a randomly given time of day between 09:00 and 16:00 hours. The QF average CSA and volume increased significantly ($p < 0.001$) in both the morning and afternoon training groups by 2.7% and 3.5%, respectively. The 0.8% difference between the training groups was not significant. The entire 20-week training period resulted in significant increases in maximum voluntary contraction and 1RM of similar magnitude in both training groups ($p < 0.001$ and $p < 0.01$, respectively) as compared with the control group. In conclusion, 10 weeks of strength training performed either in the morning or in the afternoon resulted in significant increases in QF muscle size. The magnitude of muscular hypertrophy did not statistically differ between the morning and afternoon training times. From a practical point of view, strength training in the morning and afternoon hours can be similarly efficient when aiming for muscle hypertrophy over a shorter period of time (<3 mo).

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