

## The Effects of an Acute Bout of Resistance Training on College-Aged Male 24hr RMR

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It has been demonstrated that increasing caloric expenditure through exercise participation is one mechanism by which to modify caloric balance in favor of weight loss. While chronic resistance training (RT) has been demonstrated to elevate resting metabolic rate (RMR) due to increased lean mass, there has been less research on the acute effects of a single bout of resistance training on RMR. Thus the effects of acute RT on 24 h RMR may provide insight to another mechanism by which RT may positively affect energy expenditure. **PURPOSE:** To determine the effects of an acute bout of resistance training on the 24 h RMR of college-aged males. **METHODS:** Ten healthy men aged 18-24 yr performed 8 exercises: single leg dumbbell step-ups, bent over dumbbell row, single leg lunge, barbell bench press, back squat, barbell shoulder press, biceps curls and triceps extensions (2 sets, 10 repetitions, 2 min recovery, 70% 1RM & 8RM) following ACSM Guidelines for RT. Subjects reported for testing following a 12 h fast and engaged in 7, 30 min RMR measurements over the next 24 h (2 pre-exercise, 5 post exercise). Diet was controlled during the entire 24 h period. Subjects completed both an experimental (RT) and control (no exercise) day separated by 1 week. **RESULTS:** RMR (kcal) data was analyzed using a 1 way ANOVA with repeated measures on 2 factors (group and time). Statistical analysis revealed that there was no significant main effect for group ( $2179.58 \pm 44.82$  kcal vs.  $2143.16 \pm 44.82$  kcal;  $F = .330$ ,  $p = .567$ ) or group x time interaction ( $F = .592$ ,  $p = .736$ , Table 1). There was a significant main effect for time ( $F = 5.126$ ,  $p < .001$ ). **CONCLUSION:** We conclude that an acute bout of RT, following ACSM guidelines, did not significantly impact RMR in RT males 24 h post-exercise.

**Table 1.**

**Mean 24-hour RMR Values by Group**

<i>RMR Measurement</i>	1	2	3	4	5	6	7
<i>Experimental (kcal)</i>	1922.76 ± 118.57	2199.89 ± 118.57	2426.10 ± 118.57	2066.59 ± 118.57	2427.42 ± 118.57	2205.77 ± 118.57	2008.55 ± 118.57
<i>Control (kcal)</i>	1783.70 ± 118.57	2336.24 ± 118.57	2189.38 ± 118.57	2010.28 ± 118.57	2392.67 ± 118.57	2180.48 ± 118.57	2109.41 ± 118.57

*Note.* Values are means ± standard error.