

The Effects of Multiple Bouts of TABATA on Post-Exercise Metabolism: A Pilot Analysis

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ABSTRACT

PURPOSE: Compare the resting metabolic rate (RMR) following: 1) no exercise (REST), 2) completion of 1 bout of TABATA (1-BOUT), 3) completion of 2 bouts of TABATA (2-BOUT), and 4) completion of 10 bouts of TABATA (10-BOUT). **METHODS:** Recreationally active individuals ($n = 5$; 1F, 4M; age = 23.4 ± 1.9 yrs; body mass = 72.7 ± 16.9 kg; body fat% = 28.7 ± 4.9) performed each of the 4 protocols on separate days with at least 7 days in between protocols. Rest consisted of not exercising on the day of the assessment. 1-BOUT consisted of performing a single bout of TABATA for 20 minutes. 2-BOUT consisted of performing two 20-minute bouts of TABATA. 10-BOUT consisted of performing ten 4-minute bouts of TABATA. Tabata involved performing repeated cycles of body calisthenics at maximal effort for 20 seconds followed with 10 seconds of rest. Participants completed the 1-BOUT just prior to having their RMR assessed. For the 2-BOUT, one 20-min bout was completed during the morning and the second 20-min bout was completed in the afternoon just prior to the RMR assessment. For the 10-BOUT, five separate 4-min bouts were completed in the morning and 5 more bouts were completed separately in the afternoon just prior to the RMR assessment. For rest, participants avoided vigorous activity throughout the day and then sat quietly in the laboratory for 40 minutes during the afternoon just prior to the RMR assessment. For each bout, the participants wore a Charge 3 Fitbit watch to track their physical activity on the day of their RMR assessment. Each of the four protocols was completed by 1600 hours in the afternoon. Five minutes following the completion of each protocol, the participants' metabolic rate (MR) was assessed in 10-minute intervals over the next hour and was completed by 1730 hours. The RMR assessment included the participants' average VO_2 (l/min), respiratory exchange ratio (RER), fat oxidation (total grams), carbohydrate (CHO) oxidation (total grams), and total energy expenditure (TEE). Significant differences ($p < .05$) between the bouts were determined using a one-way, repeated measures ANOVA and Bonferroni post-hoc test. **RESULTS:** Average VO_2 was unchanged between protocols ($p = .86$). TEE was unchanged between protocols ($p = .86$). RER was unchanged between protocols ($p = .37$). Fat oxidation was unchanged between protocols ($p = .30$). CHO oxidation was unchanged between protocols ($p = .53$). **CONCLUSION:** When compared to rest, the Tabata regimens did not have a statistically significant impact on the individuals' metabolism. Despite no statistical difference, there were some meaningful reductions in RER following 1-BOUT (ES = -1.2), 2-BOUT (ES = -1.4), and 10-BOUT (ES = -1.6). In addition, there were meaningful elevations in fat oxidation following 1-BOUT (ES = 1.2), 2-BOUT (ES = 1.8), and 10-BOUT (ES = 1.7). There was also some mild elevation in energy expenditure following 1-BOUT (ES = .46), 2-BOUT (ES = .66), and 10-BOUT (ES = .58). This study is ongoing and the small sample size from which this data is being reported might explain why no statistical difference was found with the Tabata regimens. Assuming the moderate changes reported in RER, fat oxidation, and energy expenditure would remain, incorporating a larger sample size might lead to significant changes in the metabolic response following the Tabata regimens.