

The effects of Ramadan fasting on resting metabolic rate in healthy non-obese individuals

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Background and aims: Fasting during the month of Ramadan entails abstinence from eating and drinking between dawn and sunset. Weight loss may be seen in some patients, but is often followed by weight regain after Ramadan. There are associated changes in several hormones and circadian rhythms; whether these are accompanying by changes in energy metabolism is unclear. We have investigated the effect of Ramadan fasting on resting metabolic rate (RMR).

Methods: Healthy non-obese volunteers (n=29, female : male = 16:13, age=33.3 ± 8.7 years) fasting during Ramadan were recruited from staff working at the Imperial College London Diabetes Centre. Measurements were performed during and after Ramadan. RMR was measured following nine hours of fasting using indirect calorimetry (Cosmed Quark RMR). Body composition was measured using bio-impedance (SECA 515).

Results: No significant difference in mean RMR in Ramadan (1361 ± 232.2 kcal/day) and post-Ramadan (1362 ± 273.6 kcal/day) periods was observed. Weight, fat mass and fat free mass were similarly unchanged in the two periods. However, individual differences were seen in RMR trends. The change in RMR after Ramadan ranged from an increase of 446 kcal/day in one patient to a reduction of 342 kcal/day in another patient (Figure 1). There were no specific predictors of the direction and magnitude of RMR change.

Conclusions: In the healthy population studied, no overall change in RMR was seen with Ramadan fasting. However, major intra-individual differences in the direction and magnitude of RMR changes were observed. Differences in diet and activity are likely to be more important contributors to weight change with Ramadan fasting. Effects of Ramadan fasting on other aspects of energy expenditure including activity and thermic effect of food await further studies.

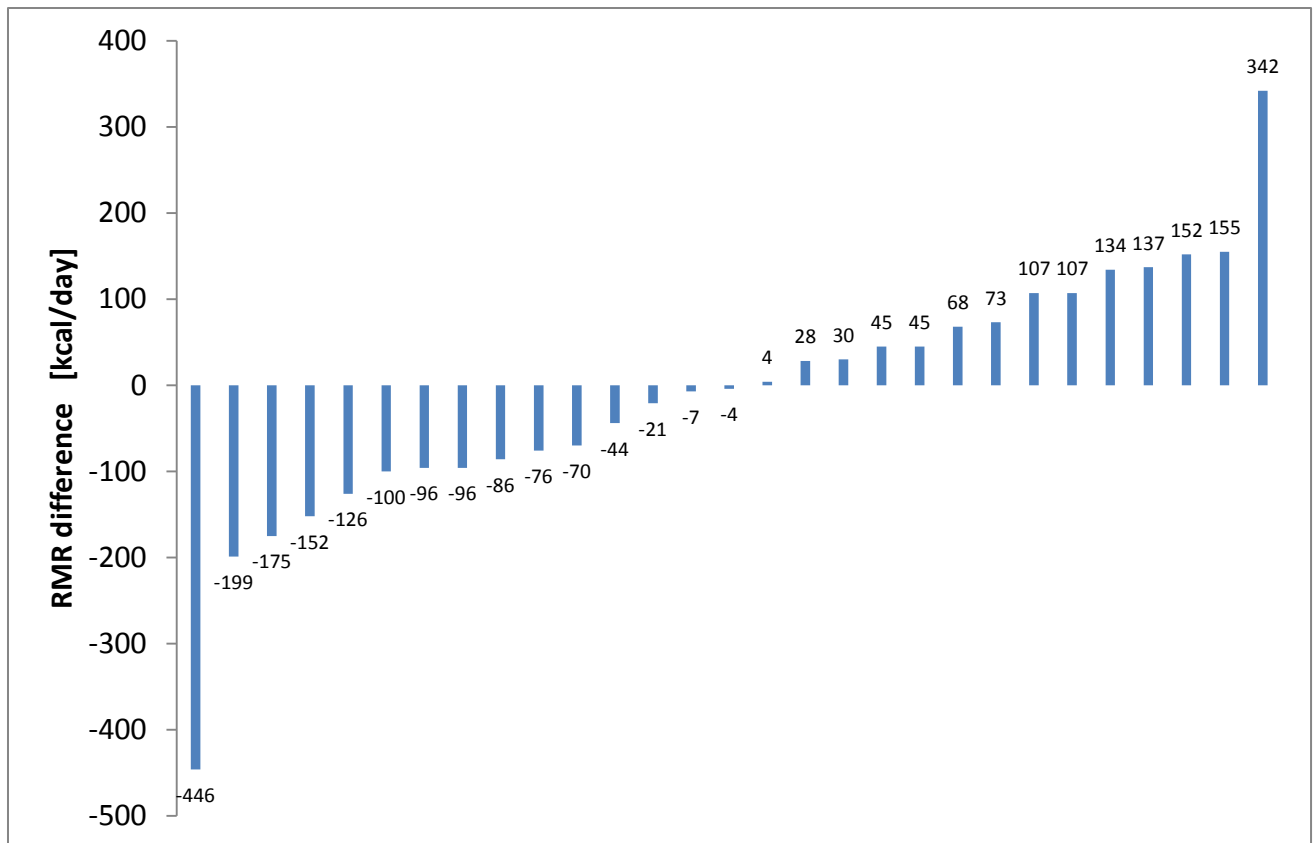


Figure 1: Individual differences in resting metabolic rate (RMR) among participants (n=29). Negative values represent a lower RMR after Ramadan; positive values denote lower RMR during Ramadan.