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**Reduced Metabolic Rate
with Dieting**

American Journal of Clinical Nutrition, Vol 44, 585-595

Adaptation of energy metabolism of overweight women to low energy intake, studied with whole-body calorimeters

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In 14 overweight women, 24-hour energy expenditure (EE) was measured in a whole-body indirect calorimeter: before weight reduction (100% diet), after 1 weeks on a 4.2-MJ diet, after 8 weeks on 4.2-MJ diet and after weight reduction on 100% diet. Mean body weight declined from 93.3 +/- 7.4 (mean +/- SD) to 83.4 +/- 7.7 kg; 24-hour EE decreased from 10.52 +/- 0.83 MJ on the 100% diet to 9.58 +/- 0.75 MJ on the 4.2- MJ diet. After 8 weeks, 24-hour EE had decreased by 15% of the initial 24-hour EE to 8.92 +/- 0.65 MJ. After refeeding (1 week), it increased to 9.45 +/- 0.75 MJ. Calculated energy requirement before weight reduction was 10.62 +/- 0.88 MJ/day; after weight reduction, 9.39 +/- 0.79 MJ/day. The decrease was more than that predicted from the change in body weight and body composition.

This study demonstrates that there is a significantly reduced metabolic rate after dieting that does not return to normal even after a normal diet is resumed