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Alternate-day fasting in nonobese subjects: effects on body weight, body composition, and energy metabolism.

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Abstract

BACKGROUND: Prolonged dietary restriction increases the life span in rodents. Some evidence suggests that alternate-day fasting may also prolong the life span.

OBJECTIVE: Our goal was to determine whether alternate-day fasting is a feasible method of dietary restriction in nonobese humans and whether it improves known biomarkers of longevity.

DESIGN: Nonobese subjects (8 men and 8 women) fasted every other day for 22 d. Body weight, body composition, resting metabolic rate (RMR), respiratory quotient (RQ), temperature, fasting serum glucose, insulin, free fatty acids, and ghrelin were assessed at baseline and after 21 d (12-h fast) and 22 d (36-h fast) of alternate-day fasting. Visual analogue scales were used to assess hunger weekly.

RESULTS: Subjects lost 2.5 +/- 0.5% of their initial body weight ($P < 0.001$) and 4 +/- 1% of their initial fat mass ($P < 0.001$). Hunger increased on the first day of fasting and remained elevated ($P < 0.001$). RMR and RQ did not change significantly from baseline to day 21, but RQ decreased on day 22 ($P < 0.001$), which resulted in an average daily increase in fat oxidation of > or =15 g. Glucose and ghrelin did not change significantly from baseline with alternate-day fasting, whereas fasting insulin decreased 57 +/- 4% ($P < 0.001$).

CONCLUSIONS: Alternate-day fasting was feasible in nonobese subjects, and fat oxidation increased. However, hunger on fasting days did not decrease, perhaps indicating the unlikelihood of continuing this diet for extended periods of time. Adding one small meal on a fasting day may make this approach to dietary restriction more acceptable.

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