Format: Abstract

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Effect of Alternate-Day Fasting on Weight Loss, Weight Maintenance, and Cardioprotection Among Metabolically Healthy Obese Adults: A Randomized Clinical Trial.

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Abstract

IMPORTANCE: Alternate-day fasting has become increasingly popular, yet, to date, no long-term randomized clinical trials have evaluated its efficacy.

OBJECTIVE: To compare the effects of alternate-day fasting vs daily calorie restriction on weight loss, weight maintenance, and risk indicators for cardiovascular disease.

DESIGN, SETTING, AND PARTICIPANTS: A single-center randomized clinical trial of obese adults (18 to 64 years of age; mean body mass index, 34) was conducted between October 1, 2011, and January 15, 2015, at an academic institution in Chicago, Illinois.

INTERVENTIONS: Participants were randomized to 1 of 3 groups for 1 year: alternate-day fasting (25% of energy needs on fast days; 125% of energy needs on alternating "feast days"), calorie restriction (75% of energy needs every day), or a no-intervention control. The trial involved a 6-month weight-loss phase followed by a 6-month weight-maintenance phase.

MAIN OUTCOMES AND MEASURES: The primary outcome was change in body weight. Secondary outcomes were adherence to the dietary intervention and risk indicators for cardiovascular disease.

RESULTS: Among the 100 participants (86 women and 14 men; mean [SD] age, 44 [11] years), the dropout rate was highest in the alternate-day fasting group (13 of 34 [38%]), vs the daily calorie restriction group (10 of 35 [29%]) and control group (8 of 31 [26%]). Mean weight loss was similar for participants in the alternate-day fasting group and those in the daily calorie restriction group at month 6 (-6.8% [95% CI, -9.1% to -4.5%] vs -6.8% [95% CI, -9.1% to -4.6%]) and month 12 (-6.0% [95% CI, -8.5% to -3.6%] vs -5.3% [95% CI, -7.6% to -3.0%]) relative to those in the control group. Participants in the alternate-day fasting group ate more than prescribed on fast days, and less than prescribed on feast days, while those in the daily calorie restriction group generally met their prescribed energy goals. There were no significant differences between the intervention groups in blood pressure, heart rate, triglycerides, fasting glucose, fasting insulin, insulin resistance, C-reactive protein, or homocysteine concentrations at month 6 or 12. Mean high-density lipoprotein cholesterol levels at month 6 significantly increased among the participants in the alternate-day fasting group (6.2 mg/dL [95% CI, 0.1-12.4 mg/dL]), but not at month 12 (1.0 mg/dL [95% CI, -5.9 to 7.8 mg/dL]), relative to those in the daily calorie restriction group. Mean low-density lipoprotein cholesterol levels were significantly elevated by month 12 among the participants in the alternate-day fasting group (11.5 mg/dL [95% CI, 1.9-21.1 mg/dL]) compared with those in the daily calorie restriction group.

CONCLUSIONS AND RELEVANCE: Alternate-day fasting did not produce superior adherence, weight loss, weight maintenance, or cardioprotection vs daily calorie restriction.

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