

Effectiveness of Intermittent Fasting for Weight Loss: It's Not Just When You Eat, but What You Eat, Too!



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This article reviews: Lowe DA et al. Effects of Time-Restricted Eating on Weight Loss and Other Metabolic Parameters in Women and Men with Overweight and Obesity. The TREAT Randomized Clinical Trial. JAMA. 2021; 181(6):883. <https://pubmed.ncbi.nlm.nih.gov/32986097/>

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STRUCTURED ABSTRACT

Question: Is time-restricted eating (also known as intermittent fasting) effective to improve weight loss and metabolic parameters in overweight (BMI 25-30) or obese (BMI >30) individuals?

Design: A 12 week unblinded randomized clinical trial

Setting: Participants were located in the United States. A subset of 50 patients who lived within 60 miles of the University of California San Francisco were eligible for in person metabolic testing.

Patients: There were 116 participants aged 18 to 64 years old. Mean 46.5 years, M:F ratio of 60:40, mean weight = 218 pounds; mean BMI = 32.7 +/- 4.2 (range: 27 to 43).

Interventions/Exposure: Participants were randomized to consistent meal timing (eating 3 structured meals a day) or time-restricted eating (where participants ate freely from noon until 8:00 PM but stopped completely from 8pm until noon the next day). All participants received multiple daily reminders through a customized phone app to weigh themselves (using an iHealth Lite Bluetooth scale provided to all participants), measure their blood pressure, complete a short daily survey, and to follow their prescribed diet plan.

Outcome: The primary outcome was weight loss. Secondary outcomes included changes in metabolic parameters including fat mass, lean mass, fasting insulin, fasting glucose, hemoglobin A1c levels, estimated energy intake, total energy expenditure, and resting energy expenditure.

Data Analysis: Intention to treat analysis.

Funding: University of California, San Francisco, Cardiology Division's Cardiology Innovations Award Program and the National Institute of Diabetes and Digestive and Kidney Diseases. Weight scales, blood pressure cuffs, and health tracking rings were gifted from iHealth Labs Inc., MOCACuff, and Oura respectively.

Results: There was significant weight loss in the time-restricted eating group loss (-0.94 kg, 1.17%, 95% CI: -1.68 kg to -0.20 kg, $P = 0.01$) but not in the consistent meal timing group (-0.68 kg, 0.75%, 95% CI: -1.41kg to 0.05 kg, $P = 0.07$). However, there was no significant difference between the two groups. In the subgroup who underwent in-person metabolic analysis ($n = 50$), the only additional significant difference was decreased appendicular lean mass index in the time-restricted eating group

COMMENTARY

Why Is This Important?

Overweight and obesity is an epidemic with serious complications and affect a large proportion of the population. Approximately 74% of the population in 2018 was overweight or obese, with estimates thought to rise in the midst of the COVID-19 pandemic.¹ Thus, it is important to find interventions to help with weight loss to mitigate long term chronic disease. While medications (e.g., semaglutide/Wegovy), sleeve gastrectomy, and Rouex-en-Y surgery have demonstrated sustained 15%-20% decreases in weight, these interventions are not covered by some insurance plans. Therefore, identifying and implementing effective lifestyle interventions for weight loss are equally important. Intermittent fasting has recently gained traction for weight loss and patients frequently ask health care providers about its efficacy.

Intermittent fasting is defined as periods of eating alternating with fasting for various periods.² Multiple types of intermittent fasting have been studied. Modified alternate-day fasting alternates between days of ad libitum eating and days with total caloric intake of 0-600 kcal for 2-5 days/week. Time-restricted

eating involves fasting for 12-16 hours each day. Both have shown to be favorable for weight loss and improvement in metabolic parameters in mice³ and humans⁴ and is the intervention used in this study.

Key Study Findings

In this randomized controlled trial (RCT), time-restricted eating alone was not more effective for weight loss compared to eating throughout the day.

In subgroup analysis, there was reduction in lean mass (vs fat mass) in the time-restricted eating group of about 65% with significant differences in appendicular lean mass. This is important as appendicular lean mass is associated with nutrition and physical status and decreases can lead to frailty and increase the risk of sarcopenia.⁵

Caution

This RCT was fairly small with only 118 participants. In addition, the macronutrient content of each participants diet was not reported, so it is unclear what was consumed in each group. Also, participants were not given any specific guidance about what types of food to eat as part of this trial. It is likely premature to state that time-restricted eating is ineffective, especially since meta-analysis of prior studies demonstrate some benefits.^{2,4} However, mean sustained weight loss has only been about 2 kg or less with all types of intermittent fasting.² Ultimately, the primary intervention in this trial was a phone application that sent frequent reminders to patients about adhering to their prescribed eating schedule.

My Practice

In my patients with overweight or obesity, I will sometimes use intermittent fasting along with dietary guidance about macronutrient intake as lifestyle interventions to aid in weight loss. I start with a simple 10-hour fast window, where one does not eat during this time (usually sometime in the evening to next morning but water and black tea or coffee are permissible). If weight loss is not achieved, then I increase the fasting window by 1-2 hours but do not exceed 14-16 hours of fasting given the lack of known benefits and increased risk (dehydration, hypoglycemia in those with diabetes, weakness). Our dietitians also counseling patients on eating healthy with a Mediterranean diet (rich in fish and chicken, fruits, vegetables, and whole

grains) with modified carbohydrate intake (not greater than 30 gm/meal). For some motivated individuals, this has been quite effective and useful especially when the patient does not want (or cannot get insurance coverage) for weight loss medications or bariatric surgery.

I do not recommend intermittent fasting in my patients with cirrhosis (even if related to nonalcoholic fatty liver disease) given the importance of nutrition and risk of sarcopenia in this patient population.

For Future Research

Further research is needed prior to uniformly recommending intermittent fasting as a true weight loss tool, specifically as it pertains to changes in lean mass. Additionally, larger trials are needed to identify the most effective protocols (e.g., time-restricted eating, modified alternate day fasting) as well as combining this with dietary counseling on macronutrient intake.

Conflict of Interest

Dr. Paul reports no conflicts of interest related to this study.

REFERENCES

1. Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of Obesity and Severe Obesity Among Adults: United States, 2017-2018. NCHS Data Brief. 2020 Feb;(360):1-8.
2. Patikorn C, Roubal K, Veettil S, et al. Intermittent Fasting and Obesity-Related Health Outcomes: An Umbrella Review of Meta-Analyses of Randomized Controlled Trials. JAMA Network Open 2021; 4 (12): e2139558.
3. Hatori M, Vollmers C, Zarrinpar A, DiTacchio L, Bushong EA, Gill S, Leblanc M, Chaix A, Joens M, Fitzpatrick JA, Ellisman MH, Panda S. Time-restricted feeding without reducing caloric intake prevents metabolic diseases in mice fed a high-fat diet. Cell Metab 2012; 15(6):848-60.
4. Moon S, Kang H, Kim SH, et al. Beneficial Effects of time-restricted eating on metabolic diseases: a systematic review and meta-analysis. Nutrients 2020; 12(5): e1267.
5. Gasmi M, Sellami M, Denham J, Padulo J, Kuvacic G, Selmi W, Khalifa R. Time-restricted feeding influences immune responses without compromising muscle performance in older men. Nutrition 2018; 51-52:29-37.