HHS Public Access

Author manuscript

JAMA Intern Med. Author manuscript; available in PMC 2022 May 13.

Published in final edited form as:

JAMA Intern Med. 2021 June 01; 181(6): 877–878. doi:10.1001/jamainternmed.2020.8934.

Caution Against Overinterpreting Time-Restricted Eating Results

Grant M. Tinsley, PhD,
Department of Kinesiology and Sport Management, Texas Tech University, Lubbock

Courtney M. Peterson, PhD,
Department of Nutrition Sciences, University of Alabama at Birmingham, Birmingham

Benjamin D. Horne, PhD, MStat, MPH
Intermountain Medical Center Heart Institute, Salt Lake City, Utah; Division of Cardiovascular Medicine, Department of Medicine, Stanford University, Stanford, California.

To the Editor

Lowe et al[1] recently published a randomized clinical trial reporting that extended daily fasting, or time-restricted eating (TRE), does not improve body weight or cardiometabolic risk factors and slightly decreases appendicular lean mass, a surrogate for muscle mass. This important study is the largest published tried of TRE and suggests that TRE does not improve cardiometabolic health, or the effects may be smaller than previously reported.

Some context is merited. First, the control group was an active comparator: participants in that group were not allowed to eat *ad libitum* but rather were instructed to eat 3 meals per day at specified times. Eating regular meals reduces body weight and postprandial insulin and cholesterol levels,[2] and some of the previously reported benefits of TRE may be mediated through eating at regular times. The statistical testing, though, did not involve a test of noninferiority for these 2 interventions, as might be expected. Second, the TRE group was instructed to skip breakfast and eat between 12 PM to 8 PM. Key metabolic circadian rhythms peak in the morning or around noontime, and several studies suggest that eating earlier in the daytime increases weight loss and improves cardiometabolic health relative to either eating later or skipping breakfast, which could possibly explain the null results.[3] Finally, participants were required to weigh themselves daily and received thrice-daily reminders to comply with study procedures, which may have caused participants in both groups to favorably alter their behavior–a phenomenon known as the Hawthorne effect. This may have limited the ability to detect differences between groups.

Caveats are also merited in interpreting the results. Although not achieving the standard $P \leq .05$ threshold for statistical significance, the control group tended to lose weight

Corresponding Author: Benjamin D. Horne, PhD, MStat, MPH, Intermountain Medical Center Heart Institute, Stanford University, 5121 S Cottonwood St, Salt Lake City, UT 84107 (benjamin.horne@imail.org).

Conflict of Interest Disclosures: Dr Tinsley has served as a scientific consultant for a phone application that allows users to monitor their usage of intermittent fasting programs; this consultancy consisted of providing evidence-based information regarding intermittent fasting. Dr Horne is the principal investigator of research grants for studies of intermittent fasting from the Intermountain Research and Medical Foundation.

compared with baseline, and the in-person TRE cohort tended to lose more weight than their control counterparts. And although the reduction in appendicular lean mass was statistically significant, the magnitude of the between-group difference was small (−0.47 kg; 95% CI, −0.82 kg to −0.12 kg). This difference of approximately 1.8% is similar to the cited root-mean-square coefficient of variation of 1.12% to 1.82% for leg and arm lean mass.[4] It is also likely that only a few individuals exceeded the least significant change, which was estimated at 1.02 kg (4.5%).[5] The functional implications of these small body composition differences are unclear. We therefore caution against overinterpreting these results. Future larger-scale clinical trials are needed before drawing definitive conclusions.

References

1. Lowe DA, Wu N, Rohdin-Bibby L, 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 Intern Med. 2020;180(11):1–9. doi:10.1001/jamainternmed.2020.4153
2. Farshchi HR, Taylor MA, Macdonald IA. Beneficial metabolic effects of regular meal frequency on dietary thermogenesis, insulin sensitivity, and fasting lipid profiles in healthy obese women. Am J Clin Nutr. 2005;81(1):16–24. doi:10.1093/ajcn/81.1.16 [PubMed: 15640455]
3. Poggiogalle E, Jamshed H, Peterson CM. Circadian regulation of glucose, lipid, and energy metabolism in humans. Metabolism. 2018;84:11–27. doi:10.1016/j.metabol.2017.11.017 [PubMed: 29195759]
4. Ng BK, Sommer MJ, Wong MC, et al. Detailed 3-dimensional body shape features predict body composition, blood metabolites, and functional strength: the Shape Up! studies. Am J Clin Nutr. 2019:110(6):1316–1326. doi:10.1093/ajcn/nqz218 [PubMed: 31553429]
5. Powers C, Fan B, Borrud LG, Looker AC, Shepherd JA. Long-term precision of dual-energy X-ray absorptiometry body composition measurements and association with their covariates. J Clin Densitom. 2015;18(1):76–85. doi:10.1016/j.jocd.2013.09.010 [PubMed: 24200863]