

EDITORIAL

Journal of Physical Activity and Health, 2005, 2, 137-142
© 2005 Human Kinetics Publishers, Inc.

Comments on U.S. Dietary Guidelines

Steven N. Blair and James R. Morrow, Jr.

The U.S. Department of Health and Human Services and the Department of Agriculture released *Dietary Guidelines for Americans 2005* (hereafter referred to as *Guidelines*) on January 13, 2005. *Guidelines* reports are developed every 5 y and typically have a major influence on government policy. The complete report and related documents including the press release may be accessed online at <http://www.healthierus.gov/dietaryguidelines/>. The new edition of *Guidelines* includes a more extensive set of recommendations on physical activity than was included in previous versions.

There were three physical activity recommendations mentioned in the *Guidelines*: one for health benefits (30 min/d), a second for the prevention of weight gain (60 min/d), and a third (90 min/d) for the maintenance of weight loss in formerly obese persons who have lost a substantial amount of weight and kept it off for several years. It is easy to confuse these recommendations, as was evident in numerous press reports following release of the *Guidelines*, and the purpose of this editorial is to discuss each recommendation and provide additional commentary on the various issues.

Physical activity for health benefits—“To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.” It is clear that this dose of physical activity provides substantial health benefits, and we believe these include weight control, on which we will comment more extensively in the next section. This 30-min recommendation has emerged from a critical evidence-base of research from multiple lines of scientific inquiry including epidemiology, small laboratory-based experimental studies, and large-scale randomized controlled clinical trials. The 30-min recommendation was first described in a 1995 joint report from the American College of Sports Medicine and the Centers for Disease Control and Prevention.¹ This recommendation has achieved consensus endorsement from several leading health organizations including 1996 reports from the U.S. Surgeon General,² American Heart Association,³ and National Institutes of Health;⁴ a 1998 report from the American College of Sports Medicine (ACSM);⁵ a 2003 report from the American Heart Association;⁶ and a 2004 report from the American Diabetes Association.⁷

Some news reports on the release of the *Guidelines* stressed that the 30 min of moderate intensity physical activity on at least 5 d per week should be considered a “minimum” recommendation. The tone of these stories tended to diminish the importance and health value of this dose of regular physical activity. We disagree with this interpretation. There is an enormous amount of data, both from observational studies on morbidity and mortality and controlled clinical trials on physiological and psychological outcomes, which support the 30-min recommendation as providing substantial health benefit. For example, this dose of activity produces a cardiorespiratory fitness level that is associated with a 50% lower mortality rate than that observed for unfit individuals.⁸ Furthermore, several papers from the Aerobics Center Longitudinal Study (ACLS) show that this level of protection applies to individuals with chronic disease and those who are obese.⁹⁻¹²

Prevention of weight gain—“To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity [physical] activity on most days of the week while not exceeding caloric intake requirements.” This is the recommendation from the *Guidelines* for which the empirical evidence is most sparse. There also is a logical fallacy in this recommendation—any amount of physical activity will be sufficient to prevent weight gain if accompanied by “not exceeding caloric intake requirements.” The key question, however, relates to how much activity is required to prevent weight gain for a typical person. Actually, the answer could be **no** physical activity—as long as energy intake does not exceed energy expenditure.

Several investigators report studies in which less than 60 min per day of activity was sufficient to prevent weight gain. A 2004 paper from the ACLS reported on the trajectory of weight over 5 y in 2501 men who had 4 examinations at the Cooper Clinic during this period.¹³ Men with an initial low activity level prevented weight gain if they increased their activity from the first to third examination. Those who increased to a moderate activity level (about 30 min of moderate intensity activity/day) lost 0.18 kg per year as compared with those who remained in the low activity category. Those who moved from low to high activity lost even more, 0.31 kg per year. This is consistent with other observational studies of large populations.^{14,15}

The value of 30 min of activity per day in preventing weight gain also is seen in randomized clinical trials, such as Project *Active* where moderate amounts and intensities of physical activity prevented weight gain over 24 months in women and men, and actually produced a reduction in body fat.¹⁶ Caloric intake remained consistent for the participants in this study. In Project *Active* the average increase in energy expenditure over the 24 months of the study was approximately 500 kcal/wk, which is actually less than 30 min/d. Young adults (age 17 to 35 y) in the Midwest Exercise Trial started exercising 20 min and increased to 45 min of exercise a day for 5 days/wk. This program prevented weight gain in women and produced weight loss in men over 16 months.¹⁷ Doubly-labeled water measures of energy expenditure in a subset of these participants indicate modest increases over the study period, where the average difference in energy expenditure at the end of the study between exercisers and controls was 119 kcal/d for women and 345 kcal/d for men.

Thus, it seems that 30 min of moderate intensity activity per day is enough to prevent weight gain for some, probably many, individuals, while some require 31 min, some require 32, etc. on up to 60 min/d or more. In fact, 60 min/d is not enough to prevent weight gain in all persons. The amount of activity to prevent weight gain is highly individualized, and may be largely genetically determined. Thus, 60 min/d is a number required for some, but it is incorrect to imply that this is some “magic” number that, if attained, will guarantee prevention of weight gain for all. In addition, some persons are successful in avoiding weight gain despite a sedentary lifestyle.

It might be better to state the prevention of weight gain recommendation as “30 min of moderate intensity physical activity/day for at least 5 d/wk provides important health benefits and is sufficient to prevent weight gain for some individuals. Others may require more activity to allow them to regulate their energy intake to match energy expenditure.” If a person is meeting the primary recommendation of 30 min/d of activity and is gaining weight, they need to increase their activity, reduce their sedentary behavior, and/or reduce caloric intake until they are in energy balance and at a stable weight.

Prevention of weight regain in formerly obese individuals—“To sustain (emphasis added) weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements.” This recommendation has been misinterpreted by some who have stated that this dose is required for weight loss. In fact, the *Guidelines* did not include any activity recommendation for weight loss. There are solid data to support the 90-min recommendation for sustaining weight loss, both from observational studies such as the National Weight Loss Registry (NWLRL) and from doubly-labeled water investigations.^{18,19} This recommendation pertains to formerly obese individuals who have lost a large amount of weight such as 30 to 50 pounds or more, and have kept it off for several years. In other words, these are individuals who have lost much weight and have been successful in keeping it off, probably because they get a lot of physical activity, on the order of 80 to 90 min/d and/or monitor dietary intake closely. This recommendation may be disheartening to obese individuals, who might be discouraged from attempts at weight loss or control, because the task of getting 90 min of activity is daunting. This recommendation, however, is based on solid evidence.

Summary

One of our primary concerns about the *Guidelines* is that they may be interpreted as a major change from earlier physical activity recommendations. This was reflected by many of the news reports following the *Guidelines*' release. If members of the public and health professionals think “Now they have doubled or tripled the physical activity recommendation, can't they make up their mind?,” promoting healthful levels of physical activity in the population will be more difficult. It is important to communicate to all that the *Guidelines* are not a major departure from previous

recommendations. In fact, the *Guidelines*' recommendations briefly described above are essentially identical to those published by a consensus conference organized by the International Association for the Study of Obesity (IASO).²⁰ The major difference between the IASO recommendations and the *Guidelines* is that the IASO recommendation for the prevention of weight gain was expressed as a range of 45 to 60 min/d. Thus, there is good agreement between these two expert panels, which had no members in common, on physical activity recommendations for weight management. We recommend that all interested parties focus on the major public health problem of physical inactivity with the fundamental recommendation of 30 min of moderate intensity physical activity per day, on most days of the week (typically interpreted as 5 or more), stress that this will provide substantial health benefits and will prevent weight gain for some. The additional 2 recommendations for prevention of weight gain and for sustaining large weight loss are important additional recommendations for subgroups of the population, but we should not leave the impression that the public health recommendation for physical activity has been increased to 60 to 90 min/d.

Finally, lest people get confused, the *Guidelines* (albeit, not really "new") are summarized as:

- **Physical activity for health benefits**—"To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week."
- **Prevention of weight gain**—"To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity [physical] activity on most days of the week while not exceeding caloric intake requirements."
- **Prevention of weight regain in formerly obese individuals**—"To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements."

Perhaps key to this document is once again confirming that physical activity has substantial health benefits in terms of preventing several chronic diseases and extending longevity. Furthermore, these benefits accrue to women and men, young and old, and those who are normal weight, overweight, or obese.

Acknowledgment

We thank Michael J. LaMonte, PhD for helpful comments on an earlier draft of this article. S.N. Blair's work is supported in part by a grant from the National Institute on Aging (AGO6945).

References

1. Pate RR, Pratt M, Blair SN, et al. Physical activity and public health: a recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA*. 1995;273:402-407.

2. US Dept of Health and Human Services. Physical activity and health: a report of the Surgeon General. Atlanta, GA: US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.
3. Fletcher GF, Balady G, Blair SN, et al. Statement on exercise: benefits and recommendations for physical activity programs for all Americans: a statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation*. 1996;94:857-862.
4. NIH Consensus Development Panel on Physical Activity and Cardiovascular Health. Physical activity and cardiovascular health. *JAMA*. 1996;276:241-246.
5. American College of Sports Medicine Position Stand. The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness, and flexibility in healthy adults. *Med Sci Sports Exerc*. 1998;30:975-991.
6. Thompson PD, Buchner D, Pina IL, et al. Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: a statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity). *Circulation*. 2003;107:3109-3116.
7. American Diabetes Association. Physical activity/exercise and diabetes. *Diabetes Care*. 2004;27 (suppl 1):S58-S62.
8. Blair SN, Kampert JB, Kohl HW, Barlow CE, Macera CA, Paffenbarger RSJ, Gibbons LW. Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all-cause mortality in men and women. *JAMA*. 1996;276:205-210.
9. Church TS, Kampert JB, Gibbons LW, Barlow CE, Blair SN. Usefulness of cardiorespiratory fitness as a predictor of all-cause and cardiovascular disease mortality in men with systemic hypertension. *Am J Cardiol*. 2001;88:651-656.
10. Church TS, Cheng YJ, Earnest CP, Barlow CE, Gibbons LW, Priest EL, Blair SN. Exercise capacity and body composition as predictors of mortality among men with diabetes. *Diabetes Care*. 2004;27:83-88.
11. Farrell SW, Braun L, Barlow CE, Cheng YJ, Blair SN. The relation of body mass index, cardiorespiratory fitness, and all-cause mortality in women. *Obes Res*. 2002;10:417-423.
12. Lee CD, Blair SN, Jackson AS. Cardiorespiratory fitness, body composition, and all-cause and cardiovascular disease mortality in men. *Am J Clin Nutr*. 1999;69:373-380.
13. Di Pietro L, Dziura J, Blair SN. Estimated change in physical activity level (PAL) and prediction of 5-year weight change in men: the Aerobics Center Longitudinal Study. *Int J Obes Relat Metab Disord*. 2004;28:1541-1547.
14. Haapanen N, Miilunpalo S, Pasanen M, Oja P, Vuori I. Association between leisure time physical activity and 10-year body mass change among working-aged men and women. *Int J Obes Relat Metab Disord*. 1997;21:288-296.
15. Schmitz KH, Jacobs DRJ, Leon AS, Schreiner PJ, Sternfeld B. Physical activity and body weight: associations over ten years in the CARDIA study. Coronary Artery Risk Development in Young Adults. *Int J Obes Relat Metab Disord*. 2000;24:1475-1487.
16. Dunn AL, Marcus BH, Kampert JB, Garcia ME, Kohl HW, III, Blair SN. Comparison of lifestyle and structured interventions to increase physical activity and cardiorespiratory fitness: a randomized trial. *JAMA*. 1999;281:327-334.

17. Donnelly JE, Hill JO, Jacobsen DJ, et al. Effects of a 16-month randomized controlled exercise trial on body weight and composition in young, overweight men and women: the Midwest Exercise Trial. *Arch Intern Med.* 2003;163:1343-1350.
18. Klem ML, Wing RR, McGuire MT, Seagle HM, Hill JO. A descriptive study of individuals successful at long-term maintenance of substantial weight loss. *Am J Clin Nutr.* 1997;66:239-246.
19. Schoeller DA, Shay K, Kushner RF. How much physical activity is needed to minimize weight gain in previously obese women? *Am J Clin Nutr.* 1997;66:551-556.
20. Saris WH, Blair SN, van Baak MA, et al. H. How much physical activity is enough to prevent unhealthy weight gain? Outcome of the IASO 1st Stock Conference and consensus statement. *Obes Rev.* 2003;4:101-114.