
Striving for a More Active Community

Lessons from the Diabetes Prevention Program and Beyond

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Introduction

The time has come for communities to become more committed and creative in developing ways to help residents of all ages and ethnic groups to increase their physical activity levels. Communities do not need another study to tell them that the prevalence of inactivity has reached epidemic levels across all subgroups of the population. National surveys of physical activity, such as the Behavioral Risk Factor Surveillance System, indicate that more than 25% of U.S. adults do not engage in any leisure-time physical activity and that the prevalence of sedentary behavior is even higher in minority populations.¹

Likewise, we do not need another study to tell us that a physically active lifestyle is important in preventing many chronic diseases and conditions. Even the greatest of skeptics would acknowledge the abundant evidence of the health benefits of activity, as stated in the 1996 U.S. Surgeon General's Report on Physical Activity and Health¹ and shown by the findings of several recent clinical trials. One such randomized trial, the recently concluded Diabetes Prevention Program (DPP), clearly demonstrated the ability of diet and exercise, resulting in a 5% to 7% weight loss, to prevent diabetes and normalize blood glucose in a diverse population of overweight American adults with impaired glucose tolerance, a condition that often precedes diabetes.

Of the 3234 participants enrolled in the DPP, 45% were from minority groups that suffer disproportionately from type 2 diabetes including African Americans, Hispanic Americans, Asian Americans and Pacific Islanders, and American Indians.^{2,3} The trial compared three approaches:

- Lifestyle changes: aim to lower body weight by 7% by lowering intake of fat and calories and participating in 150 minutes of moderate intensity activities each week.

- Metformin: take 850 milligrams of the oral diabetes drug metformin (Glucophage) twice a day. This group also got standard information on diet and exercise.
- Placebo: take placebo pills in place of metformin. This group also got standard information on diet and exercise.

The DPP's exciting results clearly showed that diet and exercise intervention effectively delayed diabetes in this diverse American population at high risk for type 2 diabetes. Participants randomly assigned to exercise/diet intervention reduced their risk of getting type 2 diabetes by 58%. This decrease in diabetes development held across all age and ethnic groups and was similar in both men and women. Metformin delayed the development of diabetes by 31%, but it was relatively ineffective in volunteers aged 60 and older.

What exactly was the physical activity prescription used in the DPP and can it be applied in communities nationwide? The DPP volunteers were asked to reduce their weight by 7% by lowering their intake of fat and calories and by exercising for 150 minutes per week in moderate-intensity activity similar to that of a brisk walk. This exercise goal is similar to the new public health recommendations, which call for an increase in moderate levels of physical activity, such as brisk walking for about 30 minutes on most days.^{1,4} The DPP exercise goal was also remarkably similar to that prescribed in two of the three recent clinical trials of type 2 diabetes prevention, the Malmö and Da Qing Studies.^{5,6} Only the Finnish Diabetes Prevention Study had a higher level of activity prescribed, 210 minutes per week of moderate-intensity activities.⁷ All of these studies consistently demonstrated a significant decrease in the progression to type 2 diabetes in the activity intervention groups, suggesting that this prescribed level of activity (150 to 210 minutes per week of moderate intensity activity such as walking) was sufficient to prevent diabetes and/or to increase and maintain weight loss that, in turn, prevented diabetes.

The flexibility of this type of activity goal will make it much easier for community members of all ages and ethnic backgrounds to adopt, because the specifics of how, when, and where to exercise can be custom-fit into

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an individual's daily routine in a way that accommodates their lifestyle and their life demands. Most importantly, physical activity that is incorporated into one's lifestyle has the potential to be maintained for years as was suggested by a 10-year follow-up study of older women who participated in a 3-year clinical trial of walking. Not only were the women who were randomized originally to the walking intervention group more active at the end of the trial, but they maintained higher physical levels compared to the control women 10 years after the trial's closure.⁸

As already noted, moderate-intensity activities such as walking are much more likely to be maintained over the years by people of different ethnic/racial and economic groups than are high-intensity sports. From the public health perspective, however, environmental and policy changes are needed to build environments in our schools, communities, and workplaces that are more favorable to physical activity and would maximize the likelihood that walking will be maintained. People are easily discouraged if they do not have a safe, accessible, convenient place in which to be active. In the quest to convince individuals to become more active and healthy, communities need to do their part by creating more secure, "walkable" environments.

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References

1. Physical Activity and Health: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, President's Council on Physical Fitness and Sports, 1996.
2. Diabetes Prevention Program Research Group. The Diabetes Prevention Program. Design and methods for a clinical trial in the prevention of type 2 diabetes. *Diabetes Care* 1999;22:623-34.
3. Diabetes Prevention Program Research Group. The Diabetes Prevention Program. Baseline characteristics of the randomized cohort. *Diabetes Care* 2000;23:1619-29.
4. Pate RR, Pratt M, Blair SN, et al. Physical activity and public health: recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 1995;273:402-7.
5. Eriksson, K.F., and F. Lindgärde. Prevention of Type 2 (non-insulin-dependent) diabetes mellitus by diet and physical exercise. *Diabetologia* 1991;34:891-8.
6. Pan X, Li G, Hu Y, et al. Effects of Diet and Exercise in Preventing NIDDM in People with Impaired Glucose Tolerance: The Da Qing IGT and Diabetes Study. *Diabetes Care* 1997;20:537-44.
7. Tuomilehto J, Lindstrom J, Eriksson JG, et al., for the Finnish Diabetes Prevention Study Group. Prevention of Type 2 Diabetes Mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001;41:1343-50.
8. Pereira MA, Kriska AM, Day RD, Cauley JA, LaPorte RE, Kuller LH. A randomized walking trial in postmenopausal women: Effects on physical activity and health 10 years later. *Arch Intern Med* 1998;158:1695-701.

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