



Commentary

Why and how to improve physical activity promotion: Lessons from behavioral science and related fields

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ABSTRACT

This commentary highlights the importance of regular physical activity to the nation's health and discusses some of the major challenges and opportunities currently facing the field.

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Among the myriad reasons that physical activity should be among the highest priorities for public health action are the pervasiveness of its impacts on physical health, mental health, health care costs, and daily functioning across the life course (Physical Activity Guidelines Advisory Committee, 2008); the fact that it exerts both independent and synergistic effects with other risk factors (Bouchard et al., 2007); and its relevance for prevention, treatment, and rehabilitation. A recent report identified physical inactivity as the fourth largest preventable cause of U.S. deaths, behind smoking, high blood pressure, and overweight/obesity (Danaei et al., 2009). There are major national initiatives to address the top three problems and others farther down the list, most of them long-standing. However, there has been relatively little organized public health effort to promote regular physical activity (Yancey et al., 2007). New developments in objective measurement demonstrate that actual physical activity prevalence rates are dramatically lower than the unacceptably-low rates from self-report measures that have been relied on for public health planning, with fewer than 10% of teens and 5% of adults meeting national recommendations (Troiano et al., 2008). If 95% of U.S. adults were smokers, it would rightly be considered a public health catastrophe, but a similar situation with physical activity is causing neither alarm nor appropriate action (see Fig. 1).

The purpose of this commentary is to identify lessons from behavioral science and related fields that demonstrate an urgent need to heighten the national priority on physical activity promotion and

highlight advances in theory and research that provide a basis for effective physical activity promotion.

Appreciating synergies with other risk factors and health behaviors

In addition to its independent effects on physical and mental health as well as daily function, extensive research supports the potentiating effects of physical activity on other physiologic as well as behavioral risk factors (Physical Activity Guidelines Advisory Committee, 2008). For example, besides the key role that regular physical activity plays in promoting energy balance across the life span, physical activity may positively impact changes in other important health behaviors, including smoking cessation (Marcus et al., 1999) and sleep (King et al., 2008b). Thus, physical activity interventions are likely to have positive “side effects” for a range of health-related behaviors and conditions.

Putting effective interventions into practice

Behavioral research, funded mostly by the U.S. National Institutes of Health (NIH), has led to notable success in developing effective evidence-based interventions. These interventions have been identified by systematic reviews from the U.S. Community Preventive Services Task Force (Kahn et al., 2002) and other agencies. Effective interventions are available for many settings (e.g., schools, communities) and can be delivered through a variety of communication channels (e.g., face-to-face, telephone, television, internet). Research on physical activity promotion continues to be a vital and expanding field, and current work includes applying technology to integrate

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Percent of U.S. Adults at Risk from
Various Behaviors & Conditions

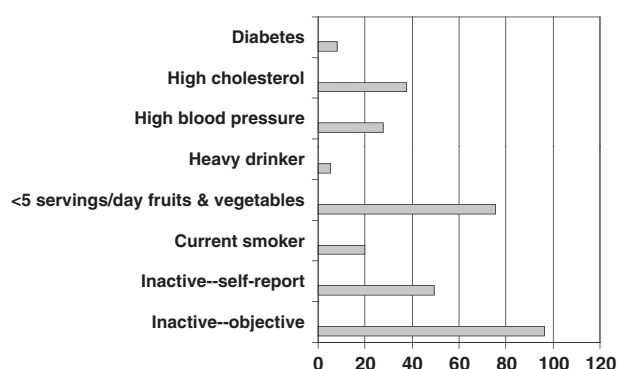


Fig. 1. Prevalence of risk behaviors and risk factors among U.S. adults. Sources: "Inactive--objective" data from Troiano RP, Berrigan D, Dodd KW, Masse LC, Tilert T, Macdowell M. Physical activity in the United States measured by accelerometer. *Med Sci Sports Exerc.* 2008; 40:181–8. All other data from 2007 Behavioral Risk Factors Surveillance System: <http://apps.nccd.cdc.gov/brfss/page.asp?yr=2007&state=UB&cat=TU#TU>.

interventions into people's daily lives, tailoring approaches for high-risk groups, increasing access to programs across population segments, enhancing long-term effects, reducing costs, and expanding knowledge about social and built environment and policy approaches in this behavioral health area (King et al, 2008a).

What is lacking, however, is widespread dissemination of effective interventions aimed at appropriate population groups; i.e., the knowledge gained is not being applied (Owen et al., 2006). Exacerbating this issue, there are substantial racial/ethnic and socioeconomic disparities in physical activity levels and inactivity-related chronic diseases (LaVeist, 2005). Such disparities deserve specific scientific attention and resource allocation, especially with respect to intervention development, evaluation, and dissemination (Owen et al., 2006). The current evidence base on the effectiveness of interventions tailored to the needs of specific racial/ethnic and other disadvantaged groups remains inadequate. Meeting these challenges will take both additional research and increased commitment from government, non-government health organizations, and the private sector to develop sustainable dissemination approaches.

Broadening intervention approaches and partners

Approaches to physical activity promotion have changed dramatically in recent years. For several decades almost all interventions were designed to educate and motivate individuals to become active. Although a variety of intervention strategies and delivery media were effective (Kahn et al., 2002), the limitations of this approach have become apparent, including restricted reach into disadvantaged population segments, less than optimal effects, difficulties with sustained change, and a restrictive focus on leisure time activities.

Interventions in the 21st century have broadened to consider how active living can be integrated into peoples' daily routines through

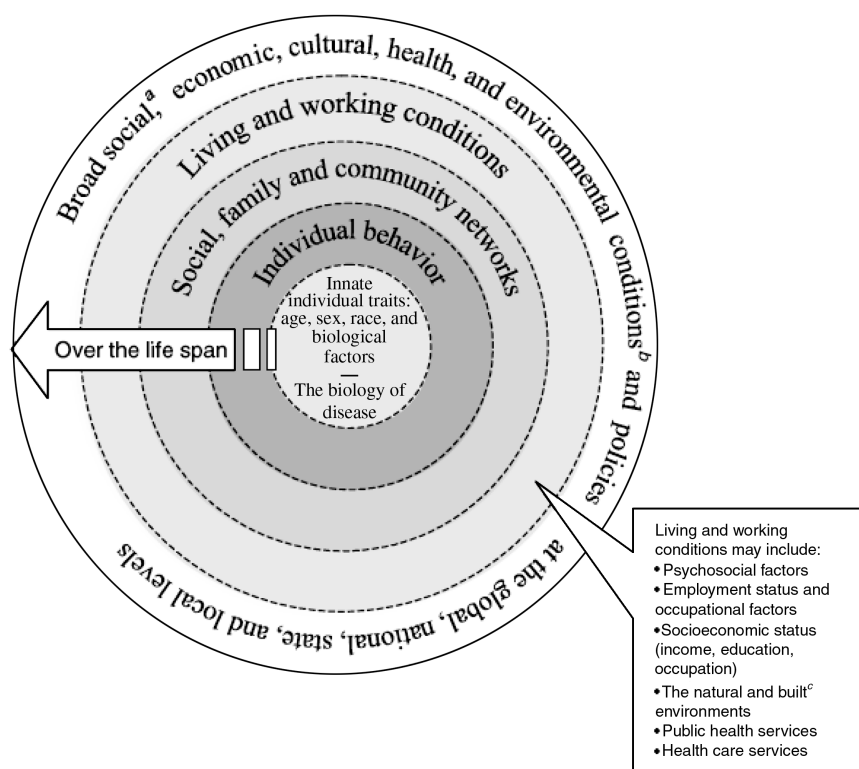


Fig. 2. The Institute of Medicine ecological model applied to physical activity (adapted from the following reference: Institute of Medicine. *Health and behavior: the interplay of biology, behavioral, and social influences*. Washington, DC: National Academies Press; 2001). Examples of physical activity correlates and interventions at all levels of the Institute of Medicine Ecological Model: **Individual characteristics:** sex, age, genes, beliefs, enjoyment of physical activity, motivation, health status; **Individual behavior:** physical activity in all domains (leisure, occupation, transportation, household), sedentary behaviors (TV, computer use, driving); **Social, family, and community networks:** being active with family members, encouragement from friends, modeling of physical activity, policies and programs in organizations, social norms, cultural values; **Living and working conditions** (including physical environment): access to recreation facilities; types and quality of programs in recreation facilities; walkable communities; access to sidewalks and bicycle lanes; physical activity programs, policies, and incentives at work; physical education, recess, and after school programs at school; **Broad, social, economic, cultural, health, and environmental conditions and policies:** physical activity depictions in mass media, economic incentives to be active vs. sedentary, reimbursement for physical activity counseling by health care providers, integrated community referral systems for physical activity, trained workforce to deliver physical activity promotion interventions and information, funding for physical activity promotion, funding for physical activity infrastructure.

recreational, transportation, occupational, and school activities. It has become clear that motivation to be active can be thwarted by a surprising array of environmental obstacles, including transportation systems designed for cars as opposed to pedestrians or cyclists; increased computerization and mechanization of work, resulting in sedentary jobs; lack of or poorly maintained parks and other green spaces; zoning laws resulting in community designs that require driving and create barriers to walking; and reduction in physical education and other activity and recreational programs in schools and parks. These environmental impediments often fall disproportionately on lower-income and ethnically diverse communities that suffer most from the diseases caused by inactive lifestyles.

Creating more “activity-friendly” environments holds promise for improving population-wide physical activity in addition to enabling the long-term success of programs targeting individuals. Conducting research on environments and policies brings with it methodological challenges and requires collaborators from disciplines outside the health field, such as city planning, transportation, parks and recreation, policy studies, and economics (Sallis et al., 2009). Implementing promising environmental strategies brings additional logistical, economic, and civic challenges. However, these challenges should not be used as an excuse for complacency in bringing science fully to bear in solving this public health crisis. Progress in the field is being made through adopting ecological models spanning multiple levels of influence (e.g., individual, social/cultural, organizational, physical environmental, and policy) (U.S. Department of Health and Human Services, 1996). Fig. 2 shows how the Institute of Medicine ecological model can be applied to physical activity.

Actions needed to improve physical activity promotion

The 1964 U.S. Surgeon General's Report on Smoking and Health galvanized the nation and triggered a systematic approach to tobacco control that produced an immediate and continuing decline in smoking prevalence. In contrast, the 1996 Surgeon General's Report on Physical Activity and Health (U.S. Department of Health and Human Services, 1996) triggered little commitment to intervention and, not surprisingly, there has been little or no increase in physical activity since its release. In the midst of the current physical inactivity epidemic, the lack of formal status for physical activity research within NIH, its general neglect within the public health field, and the lack of infrastructure and funding for physical activity promotion (Yancey et al., 2007) are no longer acceptable.

Positive rhetoric about physical activity is easy to find. Healthy People 2010 (U.S. Department of Health and Human Services, 2000) identifies physical activity as a leading health indicator. The U.S. Surgeon General and the NIH (<http://obesityresearch.nih.gov>) identify physical activity promotion as an essential component of obesity control. Physical inactivity is a recognized risk factor for our nation's major killers, including cardiovascular diseases, diabetes, and several cancers. But action is not proportional either to the rhetoric or the evidence.

Physical activity needs to be consistently placed high as a public health priority by relevant agencies and organizations. How can we tell when this occurs? The following are some indicators: an office responsible for physical activity across NIH institutes and centers; a Physical Activity Section in the American Public Health Association;

state health department funding of staff trained in and devoted to physical activity promotion; public health participation in land use and transportation planning decisions; park designs that accommodate communities' physical activity preferences; safe community walking and bicycling routes to nearby destinations; building designs that encourage the routine use of stairs; well funded and monitored physical education that ensures students are active; incorporation of objectively measured physical activity into ongoing national surveillance activities; regularly seen ads that promote physical activity on television and other media; and a systematic and permanently funded National Plan for Physical Activity with widespread support from government, non-governmental organizations, and the private sector. Only when such concrete and far-ranging activities are put into action can we begin to move the nation toward what, from an evolutionary perspective, is its ‘biological birthright’ (Cordain et al., 1998)—an active lifestyle.

Conflict of interest statement

Dr. King states that there are no conflicts of interest with this work. Dr. Sallis lists SPARK Programs and Santech, Inc. under the ‘any competing interests’ category.

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