

---

# ***Physical Activity Among Minority Populations: What Health Promotion Practitioners Should Know—A Commentary***

Sarah M. Lee, PhD

*Leisure time and moderate-level physical activity participation in the United States is low among the majority of the population. Minority populations are especially inactive and report having fewer opportunities and access to be physically active. Physical activity programs utilizing a strong health promotion framework (including needs assessment, program plan and design, program implementation, and evaluation) are limited, particularly among minority populations. The purpose of this article is to discuss the importance of physical activity, briefly review and describe current literature, identify the need for physical activity programs among minority populations, and relate the concepts of a health promotion framework to physical activity programs that are usable among practitioners. The article also provides health promotion practitioners with various resources for improving physical activity programs.*

**Keywords:** *physical activity; minority populations*

**P**hysical activity is defined as any bodily movement that is produced by skeletal muscle contraction and is also characterized by an increase in energy expenditure (U.S. Department of Health and Human Services [USDHHS], 1996). The surgeon general's report (USDHHS, 1996) and Healthy People 2010 (USDHHS, 1999) clearly identify and describe the necessity of physical activity and the importance of its health-related benefits. Although the benefits of physical activity have been widely documented, less than one half of the U.S. population engages in activity at levels sufficient to reduce risk of various diseases and health conditions, such as cardiovascular disease, diabetes, and high blood pressure (Booth & Chakravarthy, 2002; USDHHS, 1996). The threshold to receiving such benefits has been identified as 30 minutes of moderate

intensity on 5 or more days per week (USDHHS, 1996). Clearly we know that health can be improved through physical activity, however the lack of adherence suggests sedentary living is a public health problem that requires comprehensive community-based efforts.

Within Healthy People 2010 (public health goals for the United States), one of the two overarching goals is to eliminate health disparities (USDHHS, 2000). Ethnic minorities, specifically Hispanic and African American adults, report being in poor or fair health more often than White, non-Hispanic populations (Corbin, Welk, Lindsey, & Corbin, 2003). When examining differences in health status by race or ethnicity, studies show that minorities suffer from higher prevalence of chronic diseases (diabetes, hypertension) that are more commonly observed among persons who are physically inactive (Crespo, 2000). Physically inactive lifestyles are highest among minority populations, lower socioeconomic groups, women, and elderly (Centers for Disease Control [CDC], 2000; Crespo, Smith, Andersen, Carter-Pokras, & Ainsworth, 2000; USDHHS, 1996).

Although establishing the importance of a physically active lifestyle and documenting the current activity levels of the U.S. population are important starting points for public health, it is often difficult to know where or how to proceed. More specifically, an appropriate physical activity program or intervention for minority populations cannot be the same from one community to the next or similar to those aimed at non-Hispanic White populations. In this regard, health promotion efforts to increase and improve levels of physical activity cannot be exactly duplicated and/or replicated. Health promotion practitioners working in school, community, worksite, and other settings need to be familiar with existing physical activity research, correlates and levels of physical activity among minority populations, examples of interventions, and recommendations for future success.

## **Health Promotion Practice**

October 2005 Vol. 6, No. 4, 447-452

DOI: 10.1177/1524839904263818

©2005 Society for Public Health Education

**Author's Note:** Please direct all correspondence to Sarah M. Lee, 4770 Buford Hwy NE, MS K-12, Atlanta, GA 30341.

## ► PHYSICAL ACTIVITY AMONG MINORITY POPULATIONS

### *Overview of Physical Activity Levels*

A major process of eliminating health disparities is through increased levels of physical activity among minority populations. Overall, research indicates a national decline in physical activity participation among all adults, ages 18 to 65 years. Based on nationwide surveillance data, physical activity trends are also seen for race/ethnicity (Brownson et al., 2000; Taylor, Baranowski, & Young, 1998). More White, non-Hispanic adults (49.7%) are meeting the recommended guidelines for moderate physical activity than African Americans (39.2%), Hispanics (43.2%), and other ethnicities (48.0%) (CDC, 2002). In addition, minority women are more likely to be sedentary and in fair or poor health (Corbin et al., 2003).

National youth physical activity data shows very similar trends to that of adults. The 2003 Youth Risk Behavior Survey data from 9th- through 12th-grade boys and girls indicated that White, non-Hispanic students (26.2%) reported greater participation in sufficient moderate physical activity ( $\geq 30$  minutes on  $\geq 5$  of the preceding 7 days) than African American (21.7%) and Hispanic (22.0%) students (CDC, 2004). Gordon-Larsen, McMurray, and Popkin (1999) found moderate to vigorous physical activity was lower and inactivity was higher for non-Hispanic African American and Hispanic adolescents.

### *Influences on and Correlates of Physical Activity Participation*

Based on these physical activity-level differences among racial/ethnic groups, it is essential to provide an overview of literature that pertains to the influences on and correlates of being physically active among these minority populations. The following overview provides practitioners with a sense of factors that may arise for minority populations as important in initiating or adhering to a physically active lifestyle. Ethnic minority populations show patterns and correlates of physical activity and health that are different from the total U.S. population (Brownson et al., 2000; Johnson et al., 1995). It is becoming clearer from the evolution of physical activity research that minority populations have several social, environmental, political, and organizational factors influencing activity levels (Banks-Wallace, 2000; Brownson et al., 2000; Johnson et al., 1995; King et al., 2000). Some studies have examined the impact of such

factors, however data is still sparse (Manson et al., 2002).

Banks-Wallace (2000) found that African American women were influenced to participate in physical activity by personal and family histories of heart disease and other risk factors. In the same study, utilizing focus groups for data collection, the participants explained that cultural values and roles were barriers to physical activity (Banks-Wallace, 2000). African American women also identify perceptions of, benefits of, barriers to, and knowledge of physical activity as major influences on current activity choices. Interpersonal factors (i.e., social support, social norms) also appear to play a role in whether African American women report being physically active (Banks-Wallace, 2000; Wilcox, Richter, Henderson, Greaney, & Ainsworth, 2002). Another qualitative study with a sample of minority women, including Filipino, Chinese, American Indian, African American, and Hispanic participants, revealed that environmental barriers (safety, availability, and cost) and personal barriers (lack of time, health concerns, and lack of motivation) were the most common (Eyler et al., 1998). Heesch, Brown, and Blanton (2000) found that reasons for not being active, among a group of women contemplating physically active lifestyles, differed for Whites (too tired, self-conscious), African Americans (lacking safe place to exercise or walk), and Hispanics (lack time, too tired). Finally, a study examining needs and attitudes of Korean immigrant women in the United States found that physical activity is primarily influenced by cultural and immigration contexts, as well as daily life (Eun-Ok & Nyoung, 2001).

Less is known about specific correlates or influences on physical activity among minority youth. Lee and Cubbin (2002) found that Hispanic youth had lower levels of physical activity than non-Hispanic ethnicities. Taiwanese adolescents report peers having a great influence on activity choices, however parents and other interpersonal factors play less of a role (Wu & Pender, 2002). Access to convenient, school-based, and extended day activity programs are also limited among minority youth. Minority youth often face barriers that are different from those reported by non-Hispanic, White youth, such as social (social support and network), intellectual (school-based support) and environmental (safety, access, policy) barriers (Hellison, 2000). In a study comparing correlates of physical activity among African American and White female adolescents, researchers found that family support and enjoyment of physical activities were the most important for African Americans. For White adolescents in the same study, participation in organized sport and high levels of self-efficacy were stronger predictors of participation in regular physical activity (Bungum, Pate, Dowda, & Vincent, 1999). Additional research indicates that high-income White students were more likely to have physical education, take after-school activity and/or sports lessons, and have greater access to facilities and programs versus lower income, ethnic minority students

#### *The Author*

*Sarah M. Lee, PhD, is a PhD graduate from the Department of Exercise and Wellness at Arizona State University East in Mesa.*

(Larsen et al., 2000; Sallis, Zakarian, Hovell, & Hofstetter, 1996).

### ***Evidence-Based Physical Activity Interventions***

Programs and interventions to increase the initiation, adoption, and maintenance of physical activity have been implemented frequently in a variety of settings, with a variety of populations (CDC, 2001; Dunn, Andersen, Jakicic, 1998; Kahn et al., 2002). What is less clear, however, is how to build a program or intervention with long-lasting impact (i.e., physical activity levels increase and are maintained). A recent review of physical activity interventions revealed that evidence was “insufficient to assess a number of interventions” (Kahn et al., 2002, p. 73). The same review did, however, identify several interventions that were effective, including informational (point-of-decision prompts, community-wide and mass media campaigns, classroom-based health education), behavioral and social (school and college based, family based, social support, individually tailored), and environmental (enhanced access, safety, convenience) approaches to changing physical activity behavior. Of the studies reviewed, very few included programs designed with and for specific ethnic minority populations (Kahn et al., 2002). For more information, the reader is referred to the Kahn et al. (2002) review for specific details.

Lifestyle physical activity (i.e., gardening, housework, stair climbing) interventions have shown promise in increasing and maintaining levels of physical activity in samples of sedentary adults and obese children, however little is known about the effectiveness in minority populations (Dunn et al., 1998). Efforts to achieve the Healthy People 2010 objectives among minority populations are limited by the lack of information available, and it is clear that greater emphasis should be placed on the broader social and environmental contexts that affect physical activity behaviors (Banks-Wallace, 2000; Walcott-McQuigg, Zerwic, Dan, & Kelley, 2001). Interventions, programs, or research studies conducted and aimed at increasing physical activity among minority populations of all ages have shown varying effectiveness. In a review of 14 studies addressing physical activity among low-income, racial and ethnic minority, and disabled populations, it was found that the most common interventions for ethnic minority groups were advisory panels, needs assessments, and intervention delivery through community members (Taylor et al., 1998). Eight of these studies reported using a theoretical framework to guide the intervention (Taylor et al., 1998). Adult participation in a school-based intervention to improve children’s physical activity and dietary patterns, as well as results from school-based health education curriculum, showed improvements in knowledge, attitudes, and behaviors related to physical activity in minority youth (Fardy et al., 1995; Nader et al., 1996).

Yancey, Miles, and Jordan (1999) reported that the use of existing community-based organizations and agencies was a key ingredient to a successful physical activity intervention targeting underserved, African American residents. In a review of community-based lifestyle (physical activity and nutrition) interventions geared at preventing type 2 diabetes in ethnic minority populations, the majority of the researchers stressed the importance of engaging larger segments of the community and conducting participatory research (Satterfield et al., 2003).

Participatory research may prove to be one of the most significant contributions to our understanding of physical activity in minority populations. Involving members of the minority population when conducting needs assessments and subsequent physical activity interventions has shown promising results, particularly among African American populations. Oexmann and colleagues (2000) conducted a lifestyle education program with a local African American church community. Lay health advisers assisted in the design and delivery of the program, which included physical activity and nutrition components and was aimed primarily at women. The entire group showed significant short-term reduction in weight (Oexmann et al., 2000). Another appropriate example of a lifestyle education program is the *Por La vida Cuidandome* (For the life: Take care of me) intervention (Navarro, Rock, McNicholas, Senn, & Moreno, 2000). Lay health advisers were trained to conduct educational sessions to help their local Latino community recognize their existing social and community networks and organizations aimed at cancer prevention. The majority of the program involved nutrition education, with a smaller component for physical activity (Navarro et al., 2000). These are a few examples of interventions that identify options for physical activity promotion.

### ***Filling In and Addressing the Gaps***

Although sedentary lifestyles are becoming an epidemic and public health efforts must reach the masses, it is crucial for health promotion practitioners to acknowledge and understand the gap that exists in physical activity between non-Hispanic White populations and ethnic minorities. When looking specifically at ethnicity categories, there appears to be a trend in physical activity from youth to adulthood. Not only does this raise concern, it indicates a need for stronger interventions within many components of society. The following steps are proposed for health promotion practitioners to address the levels of inactivity among minority populations:

1. *Enhance and expand needs assessment efforts.* Through comprehensive, public, and community health-based needs assessments, identification of sedentary lifestyle prevention needs of minority populations will add significantly to the existing body of knowledge (McElroy, 2002; McKenzie &

Smeltzer, 2001). Physical activity programs and interventions can therefore be designed to better meet the identified needs (Taylor et al., 1998). Another important consideration is that several authors have identified differences in defining and interpreting physical activity among minority populations (Brownson et al., 2000; Tudor-Locke et al., 2003; Young, Miller, Wilder, Yanek, & Becker, 1998). When the definition of physical activity was broadened to include occupational work, housework, and walking/biking for transportation, two studies reported the level of physical activity among minority populations (African Americans, American Indian/Alaskan Native, Hispanic) increased (Brownson et al., 1998; Young et al., 1998). Utilizing measures that ask these minority populations about lifestyle-based activity in addition to formal, structured exercise allows practitioners the opportunity to identify current patterns more easily and follow through with programs aimed at these types of physical activities.

2. *Involve members of the population.* Include members from minority populations from the beginning stages of program planning. As a practitioner or researcher, initiating participatory research as part of the program or study design will provide stronger, more meaningful components of the intervention. Lay health advisers, as mentioned above, have shown to be effective in lifestyle and behavior change programs with minority populations (Oexmann et al., 2000). With greater involvement, the population is more likely to have a sense of empowerment, excitement for and commitment to physical activity (McKenzie & Smeltzer, 2001).
3. *Utilize a social ecological framework.* Another key component to increase the quality of and access to physical activity programs is the examination of broader social and environmental factors, such as cultural influences, social support, social norms, neighborhood safety, adequate facilities, and safe sidewalks. This has been identified and supported by numerous physical activity experts (Banks-Wallace, 2000; Crespo, 2000; King et al., 2000; King, Stokols, Talen, Brassington, & Killingsworth, 2002). The social ecological model focuses on interpersonal (motivation, internal perceptions, values), intrapersonal (social relationships, norms, social support), organizational (access to health care, preventive services), and community (safe, affordable facilities, environmental influences) resources that exist/do not exist for minority populations. Broader examination of such factors will provide a better foundation to either begin or continue a physical activity program (King, Stokols, et al., 2002; Riley, Taylor, & Elliott, 2001). The social ecological model for health provides a nice, broad framework from which to work within, when targeting physical activity behaviors of minorities. For example, focus groups conducted by Henderson and Ainsworth (2001) reveal that levels of physical activity among Native American women were primarily a result of broader sociocultural influences rather than personal choice. The brief review above examining influences on and correlates of physical activity clearly reveals a need to utilize a social ecological

model for programs for minority populations. Because of the evidence that numerous factors, in addition to intrapersonal ones, have an impact on physical activity behavior, the broad-based social ecological perspective may prove to be significant in future program development.

4. *Community collaboration is key.* Finally, collaborative efforts must occur between physical educators, after-school program coordinators, parents, community members, public health officials, and members of minority populations. Strong partnerships, such as these, can affect the effectiveness of public health programs promoting physical activity in minority populations. Establishing programs by enhancing and promoting existing community resources, such as community centers, churches, and health agencies, has shown to be effective with minority populations (Riley et al., 2001; Resnicow et al., 2002). Most important, utilizing health promotion frameworks and models to create physical activity programs for ethnic minority populations has the potential to contribute to the achievement of the Healthy People 2010 goal to “eliminate health disparities” (USDHHS, 2000).

## ► FINDING AND UTILIZING PHYSICAL ACTIVITY RESOURCES

Several resources exist for health promotion practitioners who are preparing to plan, implement, and evaluate physical activity programs for minority populations. To date, a handbook aimed specifically at minority populations and physical activity programs does not exist. However, the following resources are comprehensive and valuable, and can be utilized for physical activity information, planning, and program support.

- The Centers for Disease Control’s (CDC) nutrition and physical activity Web site, [www.cdc.gov/nccdphp/dnpa/index.htm](http://www.cdc.gov/nccdphp/dnpa/index.htm), provides useful information about recent and upcoming events and innovations, funding opportunities, state-based programs, and recommendations for program design with specific populations (i.e., minority).
- The 1996 surgeon general’s report on physical activity and health is available at [www.cdc.gov/nccdphp/sgr/sgr.htm](http://www.cdc.gov/nccdphp/sgr/sgr.htm). This report highlights the accumulation of evidence linking physical activity to disease risk reduction. Hard copies can be ordered via the CDC by calling (202) 512-1800.
- The University of South Carolina’s Norman J. Arnold School of Public Health provides a plethora of information, including current research studies, funding opportunities, information about their Prevention Research Center, and the South Carolina Hispanic Latino Coalition, which has a strong focus on physical activity. The Web site is [www.sph.sc.edu/default.asp](http://www.sph.sc.edu/default.asp).
- The Centers for Disease Control has created a handbook titled, *Promoting Physical Activity: A Guide for Community Action*. This guide is comprehensive and includes a framework for any stage of physical activity program planning. Hard copies are available by contacting the Health Education Authority at Cus-

tomers Services, Marston Book Services, P.O. Box 269, Abingdon, Oxon, UK OX14 4YN or at their Web site: [www.hea.org.uk](http://www.hea.org.uk).

- The American Heart Association's (AHA's) Search Your Heart initiative is a healthy heart program designed to reach African Americans in church settings. Their Web site offers tools and resources for health promotion practitioners, including activity ideas for healthy eating and physical activity promotion as well as resources for conducting blood pressure and stroke prevention screenings in church settings. Information can be found by contacting AHA at (800) 242-8721 or through the following Web site: <http://AHA.channing-bete.com>.

## ► CONCLUSION AND FINAL COMMENTS

Physical activity has a strong role in affecting the public's health and preventing the onset of numerous chronic diseases. We certainly have a long journey ahead of us as we determine how to address physical activity disparities in minority populations. However, several existing and past examples of physical activity programs/interventions, as well as the correlates literature described above, provide us with a foundation. Practitioners in all settings can benefit from this information and move forward with more innovative, practical approaches to determining physical activity needs of minority populations. Although it is important to refer to past and current broad-based programs for examples and assistance, it remains equally important to work with minority populations to determine the best avenues of aiming programs at physical activity behavior.

The utilization of participatory research and lay health advisers is strongly encouraged. In addition, with more acceptance and promotion of a social ecological approach for physical activity programs, it is promising that programs examining the broader social and environmental aspects will be successful. Although many researchers and practitioners have addressed beliefs, attitudes, values, and other individual attributes as influential factors, much less is known about potentially modifiable social and environmental characteristics and how these might be influenced to enhance behavior change. Physical activity research and programs utilizing a social ecological framework are still in an infancy stage with all populations. However, from the emerging evidence that indicates social, cultural, and environmental factors influence physical activity patterns more strongly among minority populations, it appears that a social ecological focus would allow practitioners to identify broader needs. For instance, the identification of social norms, cultural influences, characteristics of the physical environment, and access to community-based preventive services may all influence physical activity behaviors more than any individual/intrapersonal factor. Without a social ecological framework, these influences would not be identified or eventually addressed. Fitzgibbon and col-

leagues (Fitzgibbon, Stolley, Dyer, VanHorn, & Kaufer-Christoffel, 2002) developed a program aimed at minority mothers and their children through Head Start programs. These authors determined that utilizing an existing community-based service and gearing information toward the families would be much more influential than a stand-alone physical activity program that may not have been as accessible.

In essence, those physical activity programs and interventions that neglect to address what is known about the correlates and influences of physical activity among minority populations will most likely not see long-term success. Those interventions that tailor program activities to meet the multiple needs of minority populations and address various social and environmental barriers will have greater long-lasting impact, such as moving toward elimination of health disparities. As practitioners, it is our responsibility to utilize existing resources, involve more members of the minority populations we work with, and consider the multiple intrapersonal, interpersonal, organizational, and community resources either helping or hindering physical activity among minority populations.

## REFERENCES

- Banks-Wallace, J. (2000). Staggering under the weight of responsibility: The impact of culture on physical activity among African American women. *Journal of Multicultural Nursing and Health, 6*(2), 24-29.
- Booth, F., & Chakravarthy, M. (2002). Cost and consequences of sedentary living: New battleground for an old enemy. *President's Council on Physical Fitness and Sports Research Digest, 3*(16), 1-8.
- Brownson, R. C., Eyster, A. A., King, A. C., Brown, D. R., Shyu, Y. L., & Sallis, J. F. (2000). Patterns and correlates of physical activity among U.S. women 40 years and older. *American Journal of Public Health, 90*(2), 264-270.
- Bungum, T., Pate, R., Dowda, M., & Vincent, M. (1999). Correlates of physical activity among African American and Caucasian female adolescents. *American Journal of Health Behavior, 23*(1), 25-31.
- Centers for Disease Control and Prevention. (2000). *Behavioral Risk Factor Surveillance System prevalence data for physical activity*. Retrieved April 20, 2003, from [www.cdc.gov/nccdphp/dnpa/physical/stats/tainacrace.htm](http://www.cdc.gov/nccdphp/dnpa/physical/stats/tainacrace.htm)
- Centers for Disease Control and Prevention. (2001). Increasing physical activity: A report on recommendations of the Task Force on Community Preventive Services (No. RR-18). *Morbidity & Mortality Weekly Report, 50*, 1-14.
- Centers for Disease Control and Prevention. (2002). *Behavioral risk factor surveillance system summary prevalence report, 2001*. Retrieved August 15, 2004, at <http://www.cdc.gov/brfss/>
- Centers for Disease Control and Prevention. (2004). Surveillance summaries. *Morbidity Mortality Weekly Report, 53*(SS-2), 1-96.
- Corbin, C. B., Welk, G. J., Lindsey, R., & Corbin, W. R. (2003). *Concepts of fitness and wellness: A comprehensive lifestyle approach*. Boston: McGraw-Hill.
- Crespo, C. J. (2000). Encouraging physical activity in minorities: Eliminating disparities by 2010. *Physician and Sports Medicine, 28*(10), 36-47.
- Crespo, C. J., Smith, E., Andersen, R. E., Carter-Pokras, O., & Ainsworth, B. E. (2000). Race/ethnicity, social class and their relation to physical inactivity during leisure time: Results from the

- Third National Health and Nutrition Examination Survey, 1988-1994. *American Journal of Preventive Medicine*, 18(1), 46-53.
- Dunn, A., Andersen, R., & Jakicic, J. (1998). Lifestyle physical activity interventions: History, short- and long-term effects, and recommendations. *American Journal of Preventive Medicine*, 15(4), 398-412.
- Eun-Ok, I., & Nyoung, A. (2001). Physical activity of Korean immigrant women in the U.S.: Needs and attitudes. *International Journal of Nursing Studies*, 38, 567-577.
- Eyler, A., Baker, E., Cromer, L., King, A., Brownson, R., & Donatelle, R. (1998). Physical activity and minority women: A qualitative study. *Health Education and Behavior*, 25(5), 640-652.
- Fardy, P. S., White, R. E., Clark, L. T., Amodio, G., Hurster, M. H., McDermott, K. J., et al. (1995). Health promotion in minority adolescents: A Healthy People 2000 pilot study. *Journal of Cardiopulmonary Rehabilitation*, 15(1), 65-72.
- Fitzgibbon, M. L., Stolley, M. R., Dyer, A. R., VanHorn, L., & Kaufer-Christoffel, K. (2002). A community-based obesity prevention program for minority children: Rationale and study design to Hip Hip to Health Jr. *Preventive Medicine*, 34(2), 289-297.
- Gordon-Larsen, P., McMurray, R., & Popkin, B. (1999). Adolescent physical activity and inactivity vary by ethnicity: The National Longitudinal Study of Adolescent Health. *Journal of Pediatrics*, 135(3), 301-306.
- Heesch, K. C., Brown, D. R., & Blanton, C. J. (2000). Perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups. *Women and Health*, 30(4), 61-76.
- Hellison, D. (2000). Physical activity programs for underserved youth. *Journal of Science and Medicine in Sport*, 3(3), 238-242.
- Henderson, K. A., & Ainsworth, B. E. (2001). Physical activity and human development among older Native American women. *Journal of Aging and Physical Activity*, 9, 285-299.
- Johnson, K., Anderson, N., Bastida, E., Kramer, B., Williams, D., & Wong, M. (1995). Panel II: Macrosocial and environmental influences on minority health. *Health Psychology*, 14(7), 601-612.
- Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howze, E. H., Powell, K. E., et al. (2002). The effectiveness of interventions to increase physical activity. *American Journal of Preventive Medicine*, 22(4), S73-S107.
- King, A. C., Castron, C., Wilcox, S., Eyler, A. A., Sallis, J. F., & Brownson, R. C. (2000). Personal and environmental factors associated with physical inactivity among different racial-ethnic groups of U.S. middle-aged and older-aged women. *Health Psychology*, 19(4), 354-364.
- King, A. C., Stokols, D., Talen, E., Brassington, G. S., & Killingsworth, R. (2002). Theoretical approaches to the promotion of physical activity: Forging a transdisciplinary paradigm. *American Journal of Preventive Medicine*, 23(2), S15-S25.
- Larsen, P., McMurray, R., & Popkin, B. (2000). Determinants of adolescent physical activity and inactivity patterns. *Pediatrics*, 105(6), 1-8.
- Lee, R., & Cubbin, C. (2002). Neighborhood context and youth cardiovascular health behaviors. *American Journal of Public Health*, 92(3), 428-436.
- Manson, J.E., Greenland, P., Lacroix, A. X., Stefanick, M. L., Mouton, C. P., Oberman, A., et al. (2002). Walking compared with vigorous exercise for the prevention of cardiovascular events in women. *New England Journal of Medicine*, 347(10), 716-725.
- McElroy, M. (2002). *Resistance to exercise: A social analysis of inactivity*. Champaign, IL: Human Kinetics.
- McKenzie, J., & Smeltzer, J. (2001). *Planning, implementing, and evaluating health promotion programs: A primer*. Boston: Allyn & Bacon.
- Nader, P. R., Sellers, D. E., Johnson, C. C., Perry, C. L., Stone, E. J., Cook, K. C., et al. (1996). The effect of adult participation in a school-based family intervention to improve children's diet and physical activity: The Child and Adolescent Trial for Cardiovascular Health. *Preventive Medicine*, 25(4), 455-464.
- Navarro, A. M., Rock, C. L., McNicholas, L. J., Senn, K. L., & Moreno, C. (2000). Community-based education in nutrition and cancer: The Por La Vida Cuidandome curriculum. *Journal of Cancer Education*, 15 (3), 168-172.
- Oexmann, M. J., Thomas, J. C., Taylor, K. B., O'Neil, P. M., Garvey, W. T., Lackland, D. T., et al. (2000). Short-term impact of a church-based approach to lifestyle change on cardiovascular risk in African Americans. *Ethnicity and Disease*, 10(1), 17-23.
- Resnicow, K., Jackson, A., Braithwaite, R., DiIorio, C., Blisset, D., Rahotep, S., et al. (2002). Healthy body/healthy spirit: A church based nutrition and physical activity intervention. *Health Education Research*, 17(5), 562-573.
- Riley, B. L., Taylor, M., & Elliott, S. J. (2001). Determinants of implementing heart health promotion activities in Ontario public health units: A social ecological perspective. *Health Education Research*, 16(4), 425-441.
- Sallis, J. F., Zakarian, J. M., Hovell, M. F., & Hofstetter, C. R. 1996). Ethnic, socioeconomic, and sex differences in physical activity among adolescents. *Journal of Clinical Epidemiology*, 49(2), 125-134.
- Satterfield, D. W., Volansky, M., Caspersen, C. J., Engelgau, M. M., Bowman, B. A., Gregg, E. W., et al. (2003). Community-based lifestyle interventions to prevent type 2 diabetes. *Diabetes Care*, 26(9), 2643-2653.
- Seefeldt, V., Malina, R. M., & Clark, M. A. (2002). Factors affecting levels of physical activity in adults. *Sports Medicine*, 32(3), 143-168.
- Taylor, W., Baranowski, T., & Young, D. (1998). Physical activity interventions in low-income, ethnicity minority, and populations with disability. *American Journal of Preventive Medicine*, 15(4), 334-343.
- Tudor-Locke, C., Henderson, K. A., Wilcox, S., Cooper, R. S., Durstine, J. L., & Ainsworth, B. E. (2003). In their own voices: Definitions and interpretations of physical activity. *Women's Health Issues*, 13(5), 194-199.
- U.S. Department of Health and Human Services. (1996). *Physical activity and health: A report of the surgeon general*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.
- U.S. Department of Health and Human Services. (2000). *Healthy People 2010: Goals for the nation*. Washington, DC: U.S. Government Printing Office.
- Walcott-McQuigg, J. A., Zerwic, J. J., Dan, A., & Kelley, M. A. (2001). An ecological approach to physical activity in African American Women. *Medscape Women's Health E-Journal*, 6(6). Retrieved December 4, 2002, from [www.medscape.com/viewarticle/415128\\_print](http://www.medscape.com/viewarticle/415128_print)
- Wilcox, S., Richter, D., Henderson, K. A., Greaney, M., & Ainsworth, B. (2002). Perceptions of physical activity and personal barriers and enablers in African-American women. *Ethnicity and Disease*, 12, 353-362.
- Wu, T. Y., & Pender, N. (2002). Determinants of physical activity among Taiwanese adolescents: An application of the health promotion model. *Research in Nursing and Health*, 25, 25-36.
- Yancey, A., Miles, O., & Jordan, A. D. (1999). Organizational characteristics facilitating the initiation and institutionalization of physical activity programs in a multiethnic urban community. *Journal of Health Education*, 30(2), S44-S51.
- Young, D. R., Miller, K. W., Wilder, L. B., Yanek, L. R., & Becker, D. M. (1998). Physical activity patterns of urban African Americans. *Journal of Community Health*, 23(2), 99-112.