

**Literature Review on Women's Perceptions of Physical Activity, Literacy and Behavior
Change Outcomes**
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Women's Health and Physical Activity

Women's health is complex and multi-dimensional. Public health professionals need an understanding of health literacy; behavioral constructs which lead or impede the woman to behavior change; the perceived definitions of physical activity by women, and an appreciation of physical activity dimensions among diverse populations of women.

Population based surveillance data reflect a high prevalence of sedentary lifestyles among women and especially minority women. This portion of the literature review explores studies that address women and physical activity. There are many factors that influence physical activity among women: social issues and social roles, sense of community, physical environment, self-efficacy or empowerment, and health status. Obesity in itself is a barrier to physical activity and coupled with depression and urinary incontinence can add to the isolation and avoidance to physical activity.

A recently reported larger cross sectional study of Australian adults reflected that women who were compliant with the national physical activity recommendations of ≥ 2.5 hours of physical activity per week had a reduced risk of having abnormal glucose metabolism. This study examined a number of behaviors. One behavior was that of television watching. A sedentary lifestyle included watching television of ≥ 14 hours/week had a significantly increased risk of having "pre-diabetes" or type 2 diabetes. This behavior also increased the unhealthy behavior of snacking on foods with high fat, saturated fats and total calories.¹¹

A recently funded study by the Centers for Disease Control and Prevention utilized an ecological approach to assess physical activity among women. The study examined social, community, and environmental differences of race and ethnicity; rural versus urban; and regional variation women to determine what enables and inhibits physical activity. Consistent results among all study groups were physically activity women were reflected as younger age, having attained higher educational levels, and having greater self-efficacy. Other social environmental factors influencing exercise included seeing other people exercise and having a religious affiliation. Safety from crime was the one major environmental factor. One common theme for intervention development by all groups was increased access to facilities.^{12, 13,14,15,16,17, and 18,19,20}

Assessing Physical Activity in Women

Barbara Ainsworth in her studies of women and physical activity disputes the conclusions that women are less physically active than men by accounting for household duties as a part of physical activity measures in a woman's day. In a recent paper by Dr Ainsworth, she reports that women as a group are very active in their lives and that surveys and tools, which assess physical activity and women, may fail to measure the frequency, duration and intensity of physical activities performed by women. Most surveys fail to measure occupational, household and family activities where women spend most of their time. Today, women still have the burden of housework and caring for the family. Women report more time at work (occupational and household), 40%, and less as leisure (25%) in comparison to men (work 24% and leisure 56%). Time and motion studies of women suggest that women spend significant portions of their day (3.9 hours) in occupational, household, and family care activities and less time in recreational and conditioning activities. These activities include indoor and household chores, bearing and caring for children, obtaining goods and services. By providing better measures to assess women's usual activities performed in their daily lives 87% of women met the physical activity standards instead of the 41%. She purports that assessment tools should speak to the lives of women and recognize that women hold multiple roles in their family and that these roles may vary by age, race and ethnicity, and cultures. Although women are doing more physical movements than assessed by standard tools, women continue to gain weight and get chronic diseases.^{22,23}

The National Physical Activity Survey was a nationally representative survey collecting information on walking in all settings as well as activity restricted to only leisure time. The study instrument utilized the National Behavioral Risk Factor Survey physical activity module of 2000 and examined "Total Walking" versus "Leisure Time Walking." "Total Walking" prevalence was nearly twice that of Leisure Time Walking. "Total Walking" time also included walking at the person's occupation and was clearly an indicator in time spent walking. This survey suggested that U.S. adults do substantiate amounts of walking that are not traditionally captured in the National Behavioral Risk Factor Survey Physical Activity Module that only collects data on leisure time physical activity.²⁴

Physical activity surveys traditionally probe for structured physical activity as recreational participation or occupational activities, but few focus explicitly on dimensions tradition and important to women and therefore are not of interest to women and specifically to minority women. Focus group literature explores terminology, examples of physical activity, intensity, gender specific issues, and culturally relevant issues. Women have strong feelings that

researchers have little appreciation and understanding of what women do and do not account for the multiple roles of women. Assessment tools and programs fail to capture activities performed by women that are often intermittent and unstructured but can be performed simultaneously. Physical activity is expressed as a broad range of activities such as moving around, moving from one point to another, walking, dancing, carrying babies, household duties and other activities of daily life. Exercise is a more structured activity as an exercise class or participating in a group sport. Many women, older and minority perceive sports as male oriented or associated as professional athletes. Women perceive the term “leisure-time” as inactivity or having time to oneself and not a time to engage in physical activity. In many minority populations leisure time is a luxury and women feel guilty in taking time for physical activity. Walking is the most frequent type of physical activity engaged in by women as they perform their occupational, household and family care duties. Examples are walking to and from the bus to go to work or to accompany a child to school, general cleaning, yard care, cooking, playing with children, caring for an older adult.^{21,22,23}

Intensity is a problematic area as it is not defined by minority women as time and energy spent in physical activity but considered stress: the more intensity the greater the stress level when juggling more than one task or activity or performing an unwanted task. Sweating, increased heart rates and hard breathing are associated more with stressful events and not physical activity.²³

Literacy and Behavior Change Outcomes

Low literacy is associated with adverse outcomes and lack of compliance to treatment regimes. Health literacy represents an important variable when defining prevalence of obesity, diabetes, and other chronic diseases. Health literacy is associated with low levels of high school completion, racial and ethnic minorities, and low socio-economic status. Low literacy affects recognition of signs and symptoms, cognitive skills to manage disease or behavior change prescriptions, interpretation skills to act on results, communication of issues, problems, or needs, and understanding concepts of health, illness, and disease to bring about compliance to either disease management or lifestyle behavior changes. Public health practitioners will need to focus on developing strategies and interventions to address the health systems failure to successfully transmit the technical skills and behavioral constructs for persons with low literacy.²⁶

One of the central features of the controlled trials to prevent diabetes was the high adherence to lifestyle recommendations. The trial included assessing for readiness to change. For behavior change to occur, several theoretical constructs interact to predict physical activity and women. Self-efficacy expectation is a central belief in one's own capacity and confidence to control one's behavior. Women with high self-efficacy maintain energy during exercise, perceive less effort expended while performing the exercise, and report positive effects. Processes or stages of change are both cognitive and behavioral. Stages of change relate to continued exercise as well as moving towards the adoption of exercise. Perceived barriers to exercise are both internal and external perceptions. Perceived or real barriers involve the environment, potential injury, income, general access and availability. Outcome expectancy is the belief that exercise is a benefit with both physiological and psychological benefits. Social cognitive theory specifies three domains of behavioral change: personal, behavioral and environmental. Utilizing these constructs to promote behavior change, empowering the person, assisting to reduce barriers, developing skills to problem solve the barriers, shaping the message and setting small targets of change can promote a long-term adherence.²⁷

A recent meta-analysis 30 articles on physical activity and cardiovascular disease among women reflected several conclusions: counseling women in a primary care setting to improve their physical activity and cardio-respiratory fitness is effective, all types of walking as recreational, occupational, and household duties needed to be assessed and quantified, physical activity does reduce risk of cardiovascular disease, and physical activity volume that includes intensity, duration, and frequency needs to be studied.²⁸

Physical Activity Interventions Targeting Women Across the Lifespan

1.) Physical Activity Intervention in Youth

The American Journal of Preventive Medicine in 1998 conducted a meta analysis of studies testing physical activity interventions to increase physical activity in schools and community settings for youth. The analysis examined fourteen (14) school-based studies that met the inclusion criteria. Studies began at the third grade level, were inclusive of both genders, were multiethnic, and continued up and through college levels. These studies were randomized control studies; varied in number of students or schools; length and scope of sessions; and most utilized multiple theoretical approaches. Intervention components most commonly utilized were Social Cognitive Theory and the Social Learning Theory coupled with physical education programs, classroom curricula, and out of school physical activity. The results reflected improvements in

knowledge and attitudes related to physical activity, out-of-school physical activity levels were less positive than in-school physical activity levels, and studies with long-term follow-up reported that early physical activity levels were predictors of behavior in adulthood.²⁹

Community based studies included in the analysis were seven. In this group of studies, four were in progress. These studies were similar in age starting with third graders but no college level studies, utilized randomized control studies, and samples varied greatly. All seven studies utilized theoretical models as a basis for their interventions with both physical activity and nutrition as behaviors. The results were varied among the three completed studies with one study showing improved knowledge with no increase in physical activity, one showed a decline in physical activity with an intervention effect greater on girls than boys, and the third reflected the physical activity behaviors decrease over the adolescent years.

General results for public health practice included the following:

- To promote physical activity establish school health policies and environments to provide space, equipment, and supervision for before and after school, lunch, and recess.
- To promote long term leisure time activities across the lifespan provide appropriate resources and more emphasis on mastery of fundamental skills.
- Physical activity programs should be inclusive of all children and should be introduced in both intramural and extramural activities.
- Family opportunities and participation should be encouraged.
- Special attention should be given to community organizations that meet the needs of preadolescent and adolescent girls.
- To develop capacity and infrastructure there is a need for increased training opportunities for teachers at the college-preparation stage.
- Utilize the *Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People* that includes ten recommendations to foster physical activity through policy, environment, physical education classes, health education curricula, parental involvement, and community programs.
- Link resources and community organizations that provide physical activity opportunities as approximately 80% of physical activity occurs out side of school physical education programs.
- Foster physical activity to meet periods of increased levels: levels are associated with seasonal variation with highest levels in the summer and lowest in winter, children are more active on weekends, and time outdoors is related to increase physical activity.

2.) Physical Activity Among Women of Child Bearing Age

Studies in Canada and Australia of young women ages 18-22 years with children are the least likely group to be adequately engaged in physical activity. There are few studies that intervene with this age group. The following discusses an intervention to identify the mediators of physical

activity behavior change among this age group and to develop strategies to address them through community engagement. The participants were randomly selected from socioeconomic index of the area and divided into 3 groups. Group one received three surveys throughout the project period but no intervention, Group 2 received three surveys and a print intervention, and Group 3 received surveys, print intervention and an invitation to attend a meeting at their local child care center to discuss strategies to improve physical activity among young women with children. The discussion session explored perceived barriers to physical activity. The discussion outcomes reflected lack of self-confidence, inability to problem solve the constraints of physical activity and lack of partner support. Intervention strategies were developed to address each issue. Strategies included leisure care centers to include child care and to design “mom-friendly” activities, designing “mom-friendly” aerobic classes with adequate child care, activities planned at times so that partner could child sit, and individual strategies to improve self-confidence and problem solving skills. Intervention results showed that groups 1 and 2 had no increased physical activity and that group 3 did increase physical activity due to planning involvement. Although the intervention effect was small and not sustained at the long-term follow-up, and the partner support did not endure, the social network component was institutionalized.³⁰

3.) Physical Activity and Women of Middle age

There are few studies that intervene with this age group. Psychological and social mediators of physical activity participation are different between men and women and especially in this age grouping. Women tend to report barriers to exercise and have reduced self-efficacy and confidence in establishing physical activity patterns than men. Women tend to multi-task and their gender roles may make it difficult to set health priorities for themselves. Women socialized before 1972 and the passage of Title IX, an educational amendment that prohibited sex discrimination in school sports, may not have developed the comfort and skill needed to be physically active as today’s younger women and youth. Therefore, socio-psychological constraints and gender roles can comprise physical activity. Studies have been conducted that include self-monitoring, goal setting, relapse prevention, social support, but few studies have interventions that include discussions on gender-specific barriers to physical activity. The following discussion describes an intervention, “Fitting Fitness for Life (FIF)” for middle-aged women to increase physical activity. The intervention is a longitudinal study design incorporating six group sessions where participants identify the barriers to exercise and problem-solve the barriers specific to gender by utilizing, theoretical frameworks of Social Cognitive

Theory, Empowerment Theory, Self-in-Relation theory, and objectification theory. The intervention is handled like a workshop with the discussion as the major intervention and the participants' exercise outside the session. The results reflected significant increases in physical activity from baseline to post-intervention evaluation. The focus group discussions provided insight on four basic themes of physical activity awareness and acceptance. "All physical movement counts not just vigorous exercise." "Before this class, I wouldn't go to the gym unless I had a complete hour – take a shower and all that plus exercise – now I can go even if its just 15 minutes to walk the track." The participants experienced less guilt regarding perceived cultural norms and exercise intensity and duration – able to exercise as able. Participants are more proactive in searching out the opportunities for exercise throughout the day's activities – such as walking during lunch or breaks or parking further away from destination. The fourth theme is that physical activity or exercise is an enjoyable experience that one chooses to do for one's self. Thinking about "had to or one more thing on my list" but rather "to enjoy." Although this study had limitations as no controls, sessions were only 6 weeks in duration, recall was self-reported and responders at study follow-up had a lower baseline levels than non-responders in taking pleasure-based approach to physical activity, there are lessons learned.³¹

4.) Physical Activity and Older Women

The most sedentary group of the population is the older adult, especially the adult 75 years and older. The American Journal of Preventive Medicine in 1998 conducted a meta analysis of studies testing physical activity interventions to increase physical activity in older adults. The analysis was not gender specific, but older women comprise a large segment of this population. The analysis examined twenty-six randomized trials and three quasi-experimental studies. Studies were examined for eight different areas: effectiveness, maintenance, potential public health impact, sub-group effect, replication, generalization, cost-effectiveness, and implementation. The studies were generally community based and included walking, strengthening exercises, and low impact aerobic exercise along with utilizing the social learning theory. Of the studies only one tested the effects of cognitive and behavioral strategies in influencing exercise participation. Again, studies utilizing a combination of interventions were shown to be the effective. On-line telephone supervision was shown to be an effective alternative to face-to-face instruction. The majority of the studies were short term, 41% had interventions of 10 months and of these studies, physical activity has increased over baseline. Studies showed good results with class type format and if the classes had longevity, the participation rates were high and the levels of physical

activity increased over baseline. Of the studies that were gender specific or tested gender effects, there was little difference between the genders.³²

General results for public health practice included the following:

- Adapt and refine the current national physical activity recommendations for this targeted group.
- Additional research needed to address sub-groups such as frail at risk elderly, cognitive functioning, disability, and physical activity among elders 85 years of age and older, and socially isolated elders.
- Develop evidence-based protocols to aid health care professionals and physical activity specialists in appropriately assessing older adults and their current physical activity levels for appropriate placements.

Guide to Community Preventive Services and Physical Activity

The US Preventive Service Task Force recommends that all health care professionals counsel their client/patients on the importance of incorporating physical activity in to their daily routines. Recommendations have been made to increase physical activity for individuals and the clinical setting but until 2002 community guidelines had not been produced. The Guide to Community Preventive Services issues the following findings and recommendations for interventions that promote physical activity:^{33,34} Viewing the Community Health Services on Physical Activity is found by visiting: www.thecommunityguide.org

Community-wide Campaigns are strongly recommended to promote physical activity. This recommendation is based on large-scale, intense, highly visible, community wide campaigns with messages directed to large audiences through different types of media, such as radio, televisions, movie theaters, and newsprint. These campaigns were typically conducted as a part of a multi-component effort including strategies such as self-help groups, physical activity counseling, risk factor screening, and education, community health fairs, and environmental or policy changes such as creation of walking trails.

Point of Decision Prompts are items place at decision points to assist the person to choice a more healthy option such as signs at the elevator prompting the person to take the stairs.

Non-Family Social Supports are new support networks built to increase physical activity such as a “buddy” system at one’s occupational setting or recreational setting or walking clubs.

Individually-adapted health behavior change includes the person establishing goals and objectives from a baseline and then monitoring progress based on the baseline. This intervention

utilizing the stages of change theory to determine types of activity, support systems needed, and when and how often to monitor progress.

Enhanced Physical Activity Education Classes in Schools are recommended to increase physical activity among young people. This recommendation is based on interventions that are inclusive of all students, include vigorous activities, and extend the time of activities in the physical education class.

Creating or Improving Access to Places for physical activity is strongly recommended with interventions that involve worksites, coalitions, agencies, and communities in the attempt to change the local environment and create opportunities for increased physical activity. Changes include creating walking trails, improving access to existing facilities, and building new facilities. These recommendations include training participants, offering health education, referral to health care providers. This is a multi-component approach with value added. Social Support is value added by building, strengthening, and maintaining social networks that are supportive to the behavior changes.

The National Agenda for Action on Diabetes and Women make the following recommendations for action:

- Adolescents from 10-17 years the emphasis is on improving the health and preventive approaches with disease or who are at high risk of developing diabetes. There is a lack of quality physical education programs in schools, lack of awareness of the need for weight control, healthy diets, and physical activity among adolescents, there is a plethora of fast-food and other unhealthy eating options, and insufficient recreational activities and environments.
- Women in reproductive years from 18-44 the emphasis is on diabetes and pregnancy and reducing the negative risks, assisting women to lose the weight from pregnancy so that they do not place themselves at risk for obesity and type 2 diabetes, and assisting women to handle the multiple tasks and overcome the barriers to physical activity, healthy eating, and normal weight. Utilizing the opportunities to tailor specific intergenerational messages and assist with the practice of preventive behaviors.
- Women in the middle years from 45-64 years the emphasis is detecting diabetes as its earliest stages to prevent complications, assisting women with the sandwich generational activities, and taking the opportunities for preventive messages and behaviors as this group is highly active in their communities.

- Women in their older years from 65 years and older the emphasis is the vulnerability of developing diabetes, becoming disabled, living in poverty, and losing their social support networks and becoming socially isolated.
- Need to design social marketing campaigns that integrate messages on current diabetes–related facts aimed at women and their families regarding physical activity, nutrition, cardiovascular disease and smoking.