REDUCING RISK OF HEART DISEASE IN HEALTHY ADULT WOMEN:
INCORPORATING QUALITY OF LIFE IN PROMOTING PHYSICAL ACTIVITY IN
WOMEN WITH MULTIPLE ROLES

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ABSTRACT

Physical activity (PA) is a modifiable behavior that can reduce the incidence of heart disease (HD) and decrease the severity of most of the risk factors associated with HD. PA initiation and long-term adherence are not only functions of physical ability, but also psychosocial dynamics. Moreover, influences of PA adherence in women aged 25-44 may be related to increased number of roles, as well as their view of Quality of Life (QOL) in the context of having multiple roles. Communicating the importance of continued PA as a permanent part of lifestyle modification remains difficult, as the percentage of inactive women has not changed significantly between the years of 1999 and 2007. Additionally, this younger, healthy population is not represented in many studies, especially in terms of fulfilling multiple roles and QOL. Future research into PA adherence in younger women should take into account the affects of multiple roles and the significance of QOL.
CHAPTER I: INTRODUCTION
Heart Disease and Women

HD is the third leading cause of death, accounting for over 17,000 deaths annually for women aged 25-44 in the United States, after unintentional injuries and all types of cancer (CDC, 2003-2005). As women age, the incidence of death from HD increases to second leading cause of death in ages 46-64 and first leading cause of death for ages 65 and older. If women are able to make healthy lifestyle modifications at younger ages, preferably prior to developing multiple risk factors for HD, the incidence of HD at all ages should decrease. Efforts to improve awareness about risks of HD have increased over the past decades with campaigns including National Wear Red for Woman day and the Heart Truth, as well increased research in HD and women. These efforts have helped increase awareness in women of HD as the leading cause of death in women from 30% in 1997 to 46% in 2003 (DHDSP, 2006); however, of the same women surveyed, only 13% identify HD as their greatest health problem.

Despite the increased awareness of HD, the prevalence of modifiable risks, tobacco smoke, high cholesterol, high blood pressure, physical inactivity, increased weight, and Diabetes Mellitus II (AHA, 2009), remains high in older populations. Women aged 20-44 years of age have the lowest incidence of HD and all modifiable risks of HD except tobacco use across all adult female age groups. The overall incidence for HD in women 18-44 years is 4.7% (NHIS, 1999-2007). Incidence of high cholesterol is 11.3%, hypertension is 3.1%, physical inactivity is 36.6%, overweight is 55.3%, and Diabetes Mellitus II is 2.5% (women 18-44 years) (NHIS, 1999-2007; NHANES, 1988-2006).
Physical Activity Decreases Incidence of Heart Disease and Risks for Heart Disease

PA has been shown to decrease the severity of all of the other modifiable risks aside from tobacco smoke. Decreased PA has a relative risk of 1.5-2.4 for HD. Therefore, to reduce the risk of HD and other illnesses, the AHA and ACSM recommend that all healthy adults aged 18-65 years participate in moderate intensity aerobic PA for at least 30 minutes five days a week or vigorous intensity aerobic PA at for at least 20 minutes three days a week.

Physical Activity and Psychosocial Influences

Women aged 25-44 have less incidence of hypertension, obesity, diabetes, and dyslipidemia than any other adult female age group indicating that PA is the most significant modifiable factor in decreasing risk of HD in this population. Studies exploring PA do not target this population. Instead, much research with women and PA has been aimed at women having at least one risk factor, including obesity, hypertension, diabetes, and post-menopausal status. However, it is important to appreciate the findings of other studies in an effort to determine what psychosocial factors mediate PA participation and adherence.

SE decreases with increasing age, is lower in women compared to men, increases with increased level PA, and increases with higher level of education (Netz & Raviv, 2004). Significant cognitive and behavioral influences on PA with obese women have included SE, behavior control, reduction of barriers, and socially related motivations (Gallagher, et al., 2006; Jewson, Spittle, & Casey, 2007). PA has been shown to have a positive relationship with QOL in adults with chronic illness (Conn, et al., 2009). Other
studies with older women also have shown that PA influences QOL through mediators including SE, affect, and physical and mental health status (Elavasky, 2005; McAuley, et al., 2006; McAuley, et al., 2008). In addition, older women with PA goals related to stress reduction and well-being are more active and have higher commitment to be active than older women with PA goals related to physical health and weight loss (Purath, 2006; Segar, et al., 2008). Because there seem to be a variety of psychosocial factors related to PA, it might be assumed that individualized interventions would be most effective. However, studies of individualized primary care interventions have had conflicting results (Williams, et al., 2007).

Unique Characteristics of Women Aged 25-44 Years

Women between the ages of 18 and 45 typically experience many role changes including transition into adulthood, establishing careers, becoming parents, and caring for aging parents. It is necessary to explore the unique characteristics of women aged 25-44 years that may also influence psychosocial factors related to behavior change. Seventy-two percent of women aged 25 to 54 years in the United States were employed in 2007 (Bureau of labor statistics www.bls.gov). In married couples with families, 67.4% of mothers are employed (BLS, 2008). 71.4% of single mothers are employed. 61% of caregivers are female, and over half of total caregivers are between the ages of 18 and 49 years of age. 62% of caregivers are married and 37% have children in the household. 41% of female caregivers are employed full-time. Fifty-one percent of caregivers state they have less time for family and friends and 26% report getting less PA. Therefore, it is
important to understand how having multiple roles affects women aged 25-44 in order to
design PA interventions appropriate for this population.

For this population, having a sense of identity and a means to define oneself
contribute to a higher satisfaction with oneself and life, despite having higher number of
roles and responsibilities (Graham, et al., 2004). Women with many roles can compensate
for negative effects on well-being through role centrality and perceived control. This may
be due to the individuals feeling a sense of accomplishment when commitment to their
roles is high. These findings also beget an impression that identity and self-concept are
very important in this population when individuals decide which tasks to undertake
(Mariere, et al., 2000; Chrouser & Ryff, 2006). Additional key influences in behavior
change in other populations are SE, barriers, and the value of the outcome or goal. In this
population, barriers to PA may include time, financial resources, childcare needs, affect
toward PA, and social support.

Despite this population maintaining PA as a valued activity, the priority of PA
lessens because of the pressure of multiple roles and increase in responsibilities,
accounting for the greater level of inactivity of parents compared to non-parents and
mothers compared to fathers (Bellow-Rieken & Rhodes, 2008; Taveres & Plotnikoff,
2008). Therefore, the purpose of this paper is to further explore the psychological
determinants of PA in women aged 25 to 44 years, keeping in mind the importance of
role and identity, and recommend additional areas for research.
CHAPTER II: THEORETICAL FRAMEWORK

Social Cognitive Theory

Social cognitive theory is rooted in the triad of psychosocial functioning in which behavior is influenced by the environment and internal personal factors (Figure 1). That is, these three factors influence each other bidirectionally (Bandura, 1999; Bandura, 2001). Internal personal processes include cognitive, affective and biological events. Environmental structures may be imposed, selected, or constructed. In the imposed environment, there is no sense of control, only the ability to understand and react. However, people also may select aspects of their environment, such as where to live, through choice. The constructed environment involves creation of one’s surroundings which requires the interactions of the triad determinants of environment, behavior and personal factors. Within this relationship, external influences and internal change can alter behavior, which eventually may alter social structure. Reciprocally, social structure, such as economics, socioeconomic status and family dynamics, influences people indirectly by acting on internal self-regulatory factors (Bandura, 1999).

This triad is especially significant when considering women aged 25-44 years because of the several external pressures women with multiple roles may experience. These pressures may be related to career, family, and social norms. The perception of environmental structure may influence choices, feelings of control, and ultimately QOL. Women experiencing an imposed environment may feel that all other priorities come before personal goals, which makes personal change less likely. Women that select their environments may have a higher sense of control because they are actively making
choices in their lives in relation to their multiple roles. Women that are able to construct
their environment will perceive the most control, because they are creating their choices,
and are probably most effective in balancing their multiple roles.

Social cognitive theory maintains that people act as personal agents that are
autonomous, self-regulatory, and able to obtain, understand, and process knowledge to
ultimately change their behavior. Knowledge is acquired through modeling which
includes verbal instruction, PA, and mental synthesis of acquired knowledge (Bandura,
1999; Bandura, 2001). High-level observational learning from abstract modeling
produces generative and innovative behavior in individuals and eventually diffuses into
society. This type of behavior diffusion occurs in three steps: 1. acquisition of
knowledge, ideas, and practices and determination of their functional value; 2. adoption
of determinants based on perceived SE, essential resources, outcome expectations,
perceived opportunities, and perceived barriers; 3. social networks that influence the
individual which are grounded in psychosocial factors (Bandura, 1999). In the population

Figure 1. Pajares (2002). Overview of social cognitive theory and of self-efficacy.
of interest, these steps may be complicated by the need to consider varied affects a single behavior change may have on different roles.

Once knowledge is acquired, an individual must determine that the knowledge has enough functional value, or importance, to be worthy of changing behavior. This may occur through self-regulation when the determinants of behavior adoption become crucial. Self-regulation involves anticipation of consequences of action, setting goals, planning a course of action to achieve desired outcomes, and avoiding negative internal and external consequences (Bandura, 1999). Perceived SE, availability of resources, value of outcome expectations, and perceived opportunities must outweigh perceived barriers to move forward. Add a sentence about how this relates to your topic/population.

**Self-Efficacy**

SE is a personal belief that one has the ability to produce change through one’s actions (Bandura, 1999; Bandura, 2001). The desired outcome of change, whether completing a task or changing one’s behavior, must be a valued goal in order for the individual to succeed. The benefits need to outweigh barriers or risks, and actual achievement of the goal should cause increased self-fulfillment and decreased discontentment of failure. For women between the ages of 25-44, having multiple roles may further complicate this process. For example a goal related to career aspirations may have negative effects on the goal to attend to family needs. Goals exist in a hierarchy, wherein proximal goals guide and motivate actions in the moment, and subserve broader goals, which reflect personal value. Proximal goals are necessary to achieve broader goals, whereas broader goals construct proximal goals. According to Bandura (1999),
mastery of proximal goals can result in self-satisfaction in and of themselves, thereby becoming a source of self-motivation. As goals become more challenging, motivation and performance must increase. Efficacy beliefs guide what goals are pursued, as well as the level of effort and time dedicated to the goal. Lower SE, or belief in one’s capabilities, will result in non-achievement of goals; whereas, increased SE will bring about more effort and innovation in order to achieve goals. In women with multiple roles, the hierarchy of goals may be multifaceted.

SE is influenced by motivation to achieve a goal (Bandura, 1999). Motivation is rooted in self-evaluation of goal achievement, not in the goal itself. Motivation is formed by the expectation that an outcome, or goal can be achieved, and depends on the value of the outcome. Therefore, engagement in an activity is based on a person’s self-perception of ability and outcome of that ability to perform. Conversely, individuals will not engage if they believe they do not have the ability to succeed. In women with multiple roles, motivation to achieve a goal may be mediated by any effects the effort, time, and resources used may have on the achievement goals. This concept relates back to the value of goals, hierarchy of goals, and ultimately how to achieve self-fulfillment, or improve QOL.

Furthermore, those with higher levels of SE tend to visualize success and positive outcomes, whereas those with lower levels tend to visualize failure, which can then affect level of motivation. Increased achievement can increase SE through means of positive feedback, while failure can decrease SE through means of negative feedback (Bandura, 1999). For women aged 24-44, this feedback loop may be further complicated by having
multiple roles. For example, feelings of achievement in one area may positively affect SE in another area, or may create the perception that other areas were neglected. Conversely, failure in one area for this population may affect perceptions to achieve in other roles, or may be psychologically justified because other roles were adequately attended.
CHAPTER III: REVIEW OF THE LITERATURE

Understanding the Importance of Role Identity in Women

Two perspectives have been developed to describe the effects of multiple roles on psychological well-being. The role strain theory emphasizes that increased number of roles results in higher levels of stress and is detrimental to psychological well-being (Martire, et al., 2000). In terms of PA adherence, women having increased number of roles may experience higher levels of stress, perceive increased barriers to PA and have decreased QOL. Conversely, the role enhancement perspective proposes that having multiple roles increases psychological well-being through personal identity development (Martire, et al., 2000). If this is true, women aged 25-44 may report higher level of QOL, have higher level of SE because of goal achievement in roles, and be more likely to adhere to PA.

Martire, et al. (2000) examined psychological well-being related to role stress and role centrality in mid-life women with roles of parent care provider, wife, mother, and employee. Role centrality is the extent to which an individual identifies herself through a particular role. Previous research outlined in the article demonstrates that higher levels of role centrality lead to higher levels of well-being because these individuals experience more meaning, purpose, and behavioral guidance. However, the increased importance in maintaining a specific role may result in exacerbation of role stress because the individual’s self-concept is threatened. This occurrence may then decrease sense of well-being. This study included 296 women each of whom fulfilled all of the four roles concurrently.
The authors examined the effects of role centrality on well-being and role stress. The authors considered both opposing perspectives: 1. greater role centrality would cause increased sense of psychological well-being, or 2. greater role centrality would exacerbate role stress causing decreased sense of psychological well-being. The results supported both hypotheses in different contexts. In general, caring for a parent increased sense of psychological well-being and did not exacerbate role stress. Increased mother centrality was correlated with life satisfaction and seemed to counteract any depressive symptomatology and consequent negative effects on life satisfaction. Interestingly, higher levels of mother role stress were associated with depressive symptomatology in individuals with low mother centrality. Greater wife centrality increased sense of psychological well-being and exacerbated role stress. Analysis of employee centrality showed similar findings as wife centrality. Based on the conflicting results and the limitation using cross-sectional data, the authors speculate that individuals who are in general less satisfied with life may report higher levels of the negative effects of role stress.

In this study, the average age of participants was 43.9 years and the average age of the youngest child was 12.7 years. This population is at the upper limit of the population this paper targets. Also, responsibilities and roles change as children age, so this research may not take into account the different stressors of having younger children.

Chrouser and Ryff (2006) explored the effects of multiple roles on 2,634 men and women with varying levels of education, occupying up to eight different roles in terms of six dimensions of psychological well-being (autonomy, environmental mastery, personal
growth, positive relations with others, purpose in life, and self-acceptance). The authors’ hypothesis was grounded in the role enhancement perspective, in which increasing number of roles enhances an individual’s life through increased financial resources, social connections, power, prestige, and emotional gratification. Perceived control was also examined as a moderator in this study. The study’s hypotheses included: 1. increased number of roles is associated with increased sense of well-being and positive affect; 2. education level will moderate the degree to which the first hypothesis is supported; 3. perceived control will moderate the relationship between number of roles and sense of well-being in that individuals with multiple roles and high level of perceived control will have the highest levels of well-being, positive affect, and decreased negative affect. Roles included spouse, parent, employee, religious participant, friend, volunteer, social organization member, and caregiver. Perceived control was measured in terms of personal mastery and perceived constraints.

The results were independently significant for multiple role involvement and environmental mastery, positive relations, purpose in life and positive affect, controlling for age, gender, and education. All other dimensions were significantly supported, but with moderating influences. Overall, women reported more positive relations, lower environmental mastery, lower affect, lower autonomy, lower self-acceptance and more negative affect compared to men. For women with higher number of roles, higher level of education was significantly correlated with higher level of autonomy. Also, higher levels of autonomy for women was correlated with higher number of roles and perceived control. Interestingly, the effects of perceived control on personal growth were more
prominent in individuals with a high number of roles and less education and in individuals with low number of roles regardless of education. Control had a positive relationship with personal growth and self-acceptance, and a negative relationship with negative affect regardless of number of roles. The strongest negative association between control and negative affect was found with low role involvement. The strongest positive association between control and self-acceptance was in individuals with low role involvement.

Increased number of roles was associated with increased sense of positive affect and increased sense of well-being in all dimensions except autonomy. Women with higher education levels experienced higher levels of positive affect and sense of well-being compared to women with lower education levels. Individuals with multiple roles and high level of perceived control had the highest levels of well-being and positive affect. In addition, perceived control compensated for negative effects of having fewer roles or lower education level in terms of personal growth, negative affect and self-acceptance. Sense of control was highest in women with greatest number of roles and reporting highest sense of autonomy.

These results show that perceived control is an important psychosocial factor influencing sense of well-being, autonomy, and affect in women with multiple roles. This finding indicates that perceived control may be an important mediator of PA adherence in women aged 25-44 years. However, the population in this study ranged in ages from 25 to 74 years and included a variety of roles that may or may not be significant to the
population of interest. Additionally, the study was cross-sectional and did not examine role quality.

In an exploratory descriptive study using qualitative analysis, Graham et al. (2004) examined the way in which women perceive and structure their identity in terms of different roles through interviews with 60 employed and stay-at-home women with professionally employed husbands. The three major goals of this study were to 1. Identify which role-related identity structures were characteristic of this population, 2. Determine significant differences in structuring between employed and stay-at-home women, and 3. Determine significant differences in structuring between career and noncareer employed women. Of the total population, mean age was 39 years (range 23-64), 82% were mothers, and mean age of the youngest child was 8.36 years. The study’s external validity was limited by sample size and consisted only of white, middle-class women.

Five different groups were identified: hierarchical (60%), multirole (13.3%), holistic (10%), unembedded (3.3%), and identity transition (13.3%). In the hierarchal structure, women defined their identities through one primary role. Seventy-one percent of career employed women with the hierarchical structure defined themselves primarily through employment. The findings were not significant for specific primary role in noncareer employed women using the hierarchal structure. Stay-at-home women employing the hierarchal structure primarily identified themselves with the mother role; however, this was not significant because of small sample size. In the holistic category, women reported that all of their roles were equally important in defining self. The multirole structure incorporates hierarchical and holistic elements in that 2 or 3 roles may
be equally and of greatest importance in defining self compared to the other roles. In this group of women there were no significant findings; however, this may be due to low sample size and analysis of only four roles. Two women, one stay-at-home and one career employed, reported the unembedded structure, having a sense of identity more than as defined by their roles. Eight women were in transition, redefining their structures or their sense of identity and questioning their priorities.

In conclusion, no one type of structure seemed to elicit a higher sense of satisfaction with life or with identity, rather the women in transition were the least satisfied at that time compared to women that had a specific role identity structure. These results support that for women with multiple roles, sense of identity is a significant mediatory in QOL. If sense of identity can be associated positively to PA, women with multiple roles may be more likely to engage in long-term PA.

Physical Activity Interventions Using Psychosocial Influences in Primary Care

Most PA interventions on the individual level have been made in the primary care setting. Peterson (2007) developed a strategy for counseling in the primary care setting that includes assessment of current PA, barriers, attitudes, and physical limitations. Peterson (2007) promotes advising through education of benefits, strategies for barrier reduction and increasing motivation through problem solving, as well as assistance in finding community resources. This strategy requires collaboration of goals and tools to measure PA and evaluation and reassessment through follow-up appointments. The collaboration component influences SE by allowing the individual to determine
appropriate goals to be achieved. The individualistic method of this type of intervention would lead one to believe that it would be successful.

The PACE study (Calfas, et al., 1997) supported the assertion that several psychosocial factors mediate behavior, especially behavioral and cognitive processes of change. This study involved a primary care level intervention to increase PA in healthy, sedentary adults. The population was primarily white, employed, married women with at least a high school level of education over the age of 18 years. The experimental group was more successful in participating in PA compared to the control group. Surprisingly, SE was not significantly different between groups, and it was suggested that pre-existing motivation for PA participation may mediate SE strongly enough to negate the effects of decreasing barriers and increasing social support. This study indicates the significance of motivation in adhering to PA.

Results were conflicting in a systematic review of randomized controlled studies of exercise-referral strategies initiated by primary care in the United Kingdom (Williams, et al., 2007). The authors included 18 studies in the meta-analysis and found statistically significant increases in activity. However, only one individual of 17 referred would become moderately active, which the authors attributed to poor participation and compliance rates. According to the authors, the results are similar in comparison to previous review studies in the UK. The studies used in this analysis utilized various interventions and used various populations, therefore the results can only be generalized. Nevertheless, this meta-analysis shows that even with individualized primary care interventions, PA participation and adherence remains poor.
Cognitive and Behavioral Influences on Physical Activity in Obese Women

Studies with obese women also supported the significant influence of cognitive and behavioral influences on PA (Gallagher, et al., 2006; Jewson, Spittle, & Casey, 2007). Gallagher, et al. (2006) examined changes in psychosocial factors after implementing a six month behavioral weight loss program in obese women. The program consisted of home-based PA, caloric restriction and education. Measures included body weight, benefits, barriers, SE and PA. They found an increase in PA SE, behavioral process of change, and many cognitive processes of change with a reduction of barriers. Increased weight loss and higher level of PA were individually correlated with increased SE and use of behavioral strategies and greater decrease of barriers, as well.

This study further supports the importance of emphasizing cognitive and behavioral influences on PA in promoting change. The population included 165 overweight women between the ages of 21 and 45 years. Comorbid disorders were not excluded as long as the women were not physically limited, were not taking medications that could affect metabolism, weight, or physiologic response to PA, and were medically cleared by their physicians. Comorbidities were not discussed. Therefore, this study may have included women multiple risks for HD. Additionally, because women were obese, weight loss and health benefits may have been primary motivations to participate.

Perceived Behavior Control and Physical Activity

In studying the relationship between PA intention and outcome expectations in 241 undergraduate students, Rhodes & Matheson (2003) used intention commitment and perceived behavior control (PBC) as theorized mediators between intent and expectation
within the Theory of Planned Behavior models. The results showed a positive correlation of affective attitude and PBC on intention commitment and a positive correlation of intention commitment on intention-expectation relationship. Those with higher intention commitment, mediated by increased affective attitude and PBC had PA expectations that matched intentions. In addition, PBC positively affected intention directly. Conversely, the discrepancy between intention and expectation widens with low commitment and control. From these results it would seem that targeting PBC may result in increased SE, thereby promoting PA adherence.

Jewson, Spittle, & Casey (2007) investigated behavior determinants of PA in 30 overweight women (25-71 years of age), 17 of which were active. Women in the active group identified facilitators of PA that were more often socially related compared to women in the inactive group. Perceived barriers also differed between groups, with inactive participants reporting laziness as a barrier. Interestingly, the analysis showed no differences between the groups for intentions, attitudes, or subjective norm to participate in PA. However, there was a significant difference in PBC with active women reporting higher levels of control. Limits of this study include small sample size and self-reported PA level threatening external and internal validity of the study.

The significance of PBC in both of these studies is noteworthy because PBC is also a significant mediator of autonomy in women with multiple roles. Further exploration of the influence of PBC in healthy women aged 25-44 within the contexts of multiple roles may show a significant association with PA adherence in this population.
Demographic Themes in Psychosocial Factors Related to Physical Activity

Netz & Raviv (2004) examined the relationships among age, gender, level of education, and activity level in people aged 18-78 in connection with three postulates of SE, outcome expectations, and self-evaluated satisfaction and dissatisfaction. The study of these three cognitive behavior theory postulates is based on SE as a predictor of adoption and maintenance of PA, outcome expectations as incentives to participate in certain activities or act a certain way, and satisfaction level as an indicator of motivation and reciprocally affecting SE. Using SE and outcome expectations as dependent variables affected by independent variables of age, gender, level of PA, and education level, the results showed decrease in SE with increasing age, decreased SE in women compared to men, increased SE with increased level of PA, and increased SE with higher level of education. Outcome expectation was only significantly negatively correlated with age. The authors also analyzed health-related incentive and age and found that younger people were more likely to view PA as an activity that resulted in health benefits compared to older people. Also, people who had higher PA levels perceived themselves as being more active and fit than those of the same gender and age. This may in turn positively affect SE. In conclusion to their study, Netz and Raviv assert that future interventions be focused on differences in motivation associated with age, gender, and level of education.

Psychological Benefits of Physical Activity in Women

In addition to physical benefits, PA also accounts for decreasing stress and enhancing positive life outlook (Purath, 2006). SE is also significantly higher in
physically active women, which may be related to perceived outcomes of cognitive and affective benefits in addition to health related benefits (Purath, 2006).

Segar, et al. (2008) found that this was the case in healthy women aged 40 to 60 years old. The hypothesis revolved around self-determination theory in which personal goals and motivation are guided by social contexts. This theory maintains that extrinsic goals, such as sociocultural pressures and norms, are more controlling and less motivating than intrinsic goals, goals derived autonomously. The authors examined previous research that showed that midlife women who exercised for weight/health goals had higher extrinsic and lower intrinsic behavior regulation compared to women who exercised for goals related to stress reduction and well-being. The hypothesis that women with “physical activity goals related to weight-loss, weight maintenance/toning, and health benefits will participate in less physical activity over time, will be less committed, and will plan physical activity less than participants with goals related to sense of well-being and stress reduction” (Segar, et al. 2008) was supported.

In a healthy population this distinction is significantly important in developing interventions to increase PA, especially when considering a younger population of adult women. The goal, benefit, and outcome must be important enough to take a high priority in their busy lives. If women do not perceive themselves as unhealthy, or in need to make immediate lifestyle changes, health benefits will not motivate them and other goals will take priority.

Moreover, in a population of women with fibromyalgia it was found that PA efficacy, pain efficacy and physical Health Related Quality of Life (HRQOL) were the
most significant predictors of PA status (Culos-Reed & Brawley, 2000). Women with increased PA had higher levels of HRQOL, despite having no differences in symptoms.

Self-Efficacy and Quality of Life

Conn, et al. (2009) performed an extensive meta-analysis of studies with interventions aimed at increasing PA in adults with chronic illness. The results showed a positive relationship between PA and QOL; but they found that few studies analyzed QOL directly. In addition QOL assessments were not standardized among studies and interventions were diverse. In another study, Martin, et al. (2009) explored the relationship between QOL and PA. The study population consisted of sedentary, post-menopausal women who were overweight or obese with elevated SBP. The population was divided into a control, non-exercise group and exercise groups of 50%, 100% and 150% of PA recommendation. QOL was assessed in all groups at baseline and 6 months. Higher levels of exercise were significantly correlated with higher mental and physical QOL scores independent of weight change. This implies that weight loss as a physical benefit of exercise is not a factor in QOL, but that engaging in the activity itself improves QOL. This finding suggests that strategies to improve motivation for PA should incorporate benefits based on QOL, not only motivation for positive health related outcomes, and is especially important to consider in promoting PA adherence in healthy women.

A series of models have been developed to help understand the relationship between SE and QOL with respect to PA. Elavsky, et al. (2005) explored the role of psychological mediators, SE, affect, and physical self-esteem, in the relationship between
PA and QOL (Figure 2). These relationships were assessed in originally sedentary older adults (men and women aged 60 to 75 years) at 1 and 5 years post enrollment in a 6 month exercise program. At one year, participants with higher levels of PA had significantly higher levels of SE, physical self-worth and affect, and reported higher satisfaction with life, mediated by SE and affect. The five year assessment showed a significant, direct, positive correlation between PA and physical self-worth and affect, with affect as the only significant, direct mediator of satisfaction with life.


The results of this study show long term positive influences of PA on QOL through psychological mediators. However, this study did not as strongly support the role of SE as compared to affect in relation to satisfaction with life, especially long-term. This
result may indicate the importance of the motivation for PA as shown by other studies, where motivations such as activity enjoyment and social interaction were more significant than health related benefits.

McAuley, et al. (2006) sought to better understand the positive relationship between PA and QOL by examining three models (Figure 3) of the relationships among PA, SE, health status, mental status, and global QOL. Data were collected through interviews and questionnaires completed by older black and white women aged 59-84 years. Model 1 represented direct effects of PA on mental and physical health status and QOL. In this model, mental and physical health status influenced one another, and had bidirectional relationships with QOL, as well. Model 2 illustrated indirect effects of PA on QOL, mediated by mental and physical health status. Model 3 exemplified a social cognitive model, taking into account SE. In this model PA directly affected SE, and SE influenced mental and physical health status. Like model 2, QOL was only influenced by mental and physical health status.

The results supported all three models; however, model 3 was the strongest fit through data analysis. In this model, the relationships between PA and QOL, and SE and QOL were indirect. “PA influenced SE and QOL through physical and mental health status, which in turn influenced global QOL.” This study supports the importance of SE in affecting QOL and perhaps improved QOL can be a motivation in increasing and maintaining PA.
McAuley, et al. (2008) further explored the relationships among SE, physical and mental health status, PA, and QOL using model 3 (Figure 4) from the previous study. Data were collected at baseline and in 2 years from older women to assess significant
relationships among factors. As predicted, changes in PA were associated with changes in SE, and changes in SE were associated with changes in physical and mental health status. However, unlike the results in the previous study, only changes in mental health status were related to changes in QOL.


This group of three studies evaluated the possible mediators linking the positive association between PA and QOL. The studies involved participants that were older and did not exclude specific health problems except depression or disease states that either limited mobility or could be exacerbated by exercise. In healthy women aged 25-44, the
results may differ in terms of influence of physical health status; and mental health status may be a condition of multiple roles. The differences in factors affecting mental health status between these two age groups may also be related to different affective and cognitive developmental stages.
CHAPTER IV: DISCUSSION

Complex Psychosocial Influences on Physical Activity

The process in which individuals adopt new behaviors is complex. Historically, studies have addressed many of the factors that are theorized to influence PA participation and maintenance, including education, barriers, e.g. time, childcare, finances, social support, resources, outcome expectations, and SE. Regardless of the intervention and variables studied, SE seems to be the crucial element in understanding behavior change. Each of the other variables is correlated with SE, whether studied independently or in conjunction with some type of intervention (Sherwood & Jeffery, 2000; D’Alonzo, Stevenson, & Davis, 2004; Miller, Trost, & Brown, 2002; Calfas, et al., 1997; Gallagher, et al., 2006; Jewson, Spittle, & Casey, 2007).

“The capacity to exercise control over the nature and quality of one’s life is the essence of humanness” (Bandura, 2001)

SE inherently takes into account the factors that may influence producing change through one’s actions. Higher levels of PBC can positively affect SE because individuals will feel more influential internally through self-regulation and externally, being able to select and ultimately change their environment. The ability of an individual to act as an autonomous and self-regulatory being is possibly the most imperative element of social cognitive theory in terms of positively affecting PA. PBC, additionally mediates autonomy and QOL in women with multiple roles.
Linking Physical Activity to Quality of Life through Self-Efficacy

In attempts to better understand the associations among PA, SE and QOL, the models reviewed offer substantial insight. First, Elavsky et al. (2005) demonstrated the long-term effects of PA on satisfaction with life, mediated by SE and affect initially, then sustained by affect. McAuley, et al. (2006) expanded on this idea by analyzing three models linking PA and QOL. Again, these models were supported, with the model employing SE being the most significantly supported model. Interestingly, a long term study identified Mental Health Status as the most significant mediator of QOL (McAuley, et al., 2008). This finding supports other studies of populations with chronic illness that have shown PA positively affects QOL even when physical health may not be improved compared to matched populations that do not engage in PA (Culos-Reed & Brawley, 2000); and helps support Elavsky, et al.’s (2005) finding that affect mediates long term affects of PA on satisfaction with life. The results of these three key studies meshed have revealed a possibility of further complex interactions within the self that occur in behavior change, especially in the context of having multiple roles in younger female populations.

One conclusion raised the possibility that individuals who are in general less satisfied with life may report higher levels of role stress (Martire, et al., 2000). If so, then those more satisfied with life may have more positive outlooks, therefore, report less negative effects of role stress. This idea also may apply in PA promotion, whereby women with an inherently more positive affect may be more likely to have higher levels of SE, higher levels of PBC, and make more positive behavior changes. Parallel to this
theme, QOL is mediated by coping abilities which is influenced by PBC. People with higher satisfaction in life or QOL may be more likely to have a more positive affect, higher level of SE, and be more likely to engage in long term PA. Additionally, PA participation may have a positive feedback loop for QOL, affect, SE, PBC and coping abilities.

The Role of Goals in Behavior Change

In review of the literature, the most beneficial motivation for behavior change is intrinsic goals (Segar, et al., 2008). This idea can be related to social cognitive theory in terms of proximal and broad goals. Proximal goals guide and motivate actions in the moment, seemingly more superficial to broad goals which reflect personal value (Bandura, 1999). Participating in PA may initially appear to be a proximal goal; however, studies focused on QOL and life satisfaction have shown long term affects of PA on broad goals that affect the individual intrinsically. Moreover, in younger women with multiple roles, QOL and identity enhancement are important. PA goals that positively influence QOL and identity may influence PA adherence.

Emphasizing Quality of Life as a Motivation for Physical Activity

Though women aged 25-44 have more responsibilities and roles, research has shown that if identity is preserved and cultivated by these roles, sense of well-being is positively influenced and life is more satisfying. Women in multiple roles report valuing PA (Bellow-Rieken & Rhodes, 2008; Taveres & Plotnikoff, 2008), but may not have made it a priority because other responsibilities are perceived as more important, may yield greater benefits when accomplished, or have more negative consequences if not
accomplished. Health benefits have not been shown to be the strongest positive outcome motivator in healthy women (Segar, et al., 2008). Portrayal of PA as less of a duty and more as a health “role,” that can positively influence sense of identity and QOL through affective and behavioral influences may be a more appealing motivator to women. In addition greater emphasis on QOL as a positive outcome, rather than physical health benefits, may be a result in greater levels of commitment to PA. Another source of motivation may be in engaging families as a unit in PA promotion and exploiting mother centrality as means to promote health for the entire family.

Understanding key motivators for PA adherence in this population can help in development of strategies and interventions by practitioners in the clinical setting. Presenting PA as a way to enhance quality of life, relationships with others, and overall well-being may seem more appealing and less demanding than advising women only of the negative consequences of not engaging PA. Using a more positive approach may also serve to strengthen the patient-provider relationship.
CHAPTER V: IMPLICATIONS

Future Research

Future research should include exploring the relationship among having multiple roles, SE, behavior control, and PA participation. Additional research could involve interventions that promote QOL and identity enhancement as positive outcomes, and interventions that promote whole family involvement for outcomes that include family cohesiveness in an effort to enhance wife and mother roles. It would also be interesting and beneficial to explore the relationship of having a more positive attitude in general and SE, PBC, and QOL to develop ways in which to encourage optimism, positive outlook, and self-contentment through PA participation.

In conclusion, to effectively promote PA in women between the ages of 25 and 44, a greater understanding of the characteristics of this population is needed, including the affects of having multiple roles. If PA can be integrated into this population’s routine by redefining the value and expected outcomes of PA adherence, HD and its modifiable risks could be better prevented in this population and all other ages of adult women.

Practice Implications

In effort to decrease risk of HD in women aged 25-44, based on the evidence reviewed, recommendations to increase PA should be expressed in the context of role enhancement, rather than health benefits. Women in this population have many responsibilities which may lead to the perspective that integrating PA in their daily lives will detract from one or more of their roles. For example, a working woman with two children may not be physically active because it costs too much and takes time away
from her family. Suggestions that account for these barriers may include involving the entire family in PA, such as a game of tag, a walk to the park where the children can play while the mother walks, jogs, or jumps rope, or family hiking every weekend. If women live in an unsafe community, knowing community resources, such as a recreation center with affordable or free daycare, is very useful.

Because each woman is different in her roles and prioritization of these roles, the goals and interventions must be individualized. To understand the lifestyle of each woman may take more time than is feasible for a practitioner. One possible solution to this problem may be designing a questionnaire to be completed at home that evaluates women’s daily lives, priorities, activities of interest, preferences of group or individual PA, and desired amount of family involvement. Reviewing the answers at the next appointment may lead to realistic options. Another, possibility is to employ a PA coordinator who would be able to evaluate individual needs, be aware of community resources, and assist with creating individually suitable PA plans.

As a practitioner, emphasizing the understanding of the importance of successfully maintaining multiple roles to women in this population may strengthen the practitioner-partner relationship because the practitioner validates the magnitude of time and energy required to fulfill multiple roles and supports the personal values of each woman. This type of encouragement may increase self-efficacy by including goals that are more intrinsic and may enhance rather than detract from valued roles, subsequently improving QOL. Motivation to engage and adhere to PA in this manner preserves women’s aspirations while decreasing their risk of HD.
Policy Implications

Part of an advanced practice nurse’s role is to be active in influencing health care policy that is evidenced based. As preventative health measures gain more significance, health care policy should incorporate and support these measures. Health care policy makers should consider including the aforementioned type of self-evaluation, subsequent discussion, and PA plan as a quality indicator for preventive health. Government subsidized health care programs should include opportunities for PA along with subsidized childcare. Decreasing barriers and increasing social and government support at state and local levels may impart a more positive social atmosphere in which women can engage in PA. The long-term physical and psychological benefits of PA adherence, including decreased risk of HD and its risk factors, should translate into long-term decreases in health care costs.
REFERENCES


Culos-Reed, S. N., & Brawley, L. R. (2000). Fibromyalgia, physical activity, and daily functioning: the importance of efficacy and health-related quality of life. *Arthritis Care and Research, 13*, 343-351.


Women and Heart Disease Fact Sheet Division for Heart Disease and Stroke Prevention, National Center for Chronic Disease Prevention and Health Promotion. July 31, 2009, from http://www.cdc.gov/DHDSP/library/fs_women_heart.htm. Date last reviewed: 10/05/2006.