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# **Applying the Health Belief Model to Physical Activity Engagement Among Older Adults**

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## **Abstract**

We are currently undergoing one of the largest population swings in history, as over 79 million people will turn 65 years by 2012. This steadily growing population will soon be the largest demographic in North America and also one of the most inactive. Currently, over two-thirds are not meeting the recommended daily levels of physical activity and consequently developing chronic illnesses brought on by a sedentary lifestyle. As health and exercise practitioners, it is easy to rely on traditional methods of intervention; however, it is imperative that we consider the role that individual values and beliefs play on engagement and adherence, far before the “first step” is even taken. By applying the Health Belief Model to current research around older adults and physical activity engagement, we can better understand and identify health behaviours associated with the older adult population and develop strong intervention strategies for the future.

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**Keywords:** Health Belief Model, Older Adult, Physical Activity, Engagement

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## Introduction

As noted by the United States Census Bureau, 12.9% of the American population is currently 65 years or older with over 79 million “baby boomers” reaching this pivotal age by 2011 (Author Unknown, 2011). As we move through this major population swing, there is growing evidence that this demographic will have a considerable effect on existing systems, most notably health care, as chronic, and potentially preventable, diseases require more and more additional resources. As one can attest, we are frequently informed that the prevention of disease can literally begin with the first step. However, King (2001) noted only a small minority of the older adult population is meeting the recommended levels of physical activity. Furthermore, Goggin and Morrow Jr. (2001) found that many older adults, although aware of the impact of physical activity on their own health, did not participate in sufficient physical activity to see any significant positive health and quality-of-life benefits. Although there is a great deal of information on the effects of physical activity and programming interventions, it could be concluded that there may be strong benefits to correlating the existing information with a more holistic look at older adult’s health behaviors and its application to physical activity engagement.

### Benefits of Physical Activity In Older Adults

The benefits of physical activity for older adults are well recognized and have shown to improve the physical, functional and psychological health of this population, as well as maintain the important roles of independence and vitality. Micheli (1995) suggested there are two main therapeutic outcomes of physical activity

for older adults: 1) direct medical benefits, such as aiding in the control of hypertension, and 2) preventive medicine (i.e. prevention of cardiovascular disease).

More specifically, moderate physical activity has shown to greatly improve physiological functioning by increasing heart vitality, decreasing hypertension, and reducing arteriosclerosis as well as rates of cardiovascular disease (Sequin & Nelson, 2003). It has also shown to increase muscle function, by enhancing strength and power, augmenting tendon and ligament flexibility (Micheli, 1995), and significantly minimizing or even reversing sarcopenia (Avila-Funes & Garcia-Mayo, 2004). Physical activity has also proven psychological and cognitive benefits for older adults including augmented reasoning, working memory and reaction time (Louise-Smith & Hartley, 1989), decreases in levels of anxiety and depression (King, Carr, Taylor & Haskell, 1993) and improved executive control through the enhancement of prefrontal and temporal grey matter (Erikson & Kramer, 2009).

More specifically, both aerobic and resistance training have shown to have a positive effect on an older adult’s muscle mass as well as positively change body composition (Hunter, McCarthy & Bamman, 2004). These types of activities have also shown to improve balance and coordination, reduce rates of osteoporotic fractures (Seguin & Nelson, 2003), enhance gait velocity and power, and increase spontaneous physical activity levels (Sharkey, 2002). Moreover, moderate forms of aerobic exercise have also shown to increase levels of cardiorespiratory fitness (Nakamura, Tanaka, Tabushita, Sakai & Shigematsu, 2005), improve neurophysiolog-

ical functioning (Colcombe & Kramer, 2003), and reduce brain tissue loss (Raz, Webb, Cohen, McAuley & Kramer, 2002) Aerobic exercise has shown to have positive effects on reducing rates of smoking and alcohol consumption by older adults (Micheli, 1995).

Based on the volume of information surrounding the benefits of physical activity, one could surmise that the advantages alone would compel an individual to become more physically active; however, an individual's value and belief system has shown to have a significant impact on the identification and evaluation of individual risk factors as well as the readiness to take action.

### **The Health Belief Model**

The Health Belief Model, constructed by social psychologists Hochbaum, Rosenstock and Kegels in the 1950s to explore tuberculosis screening rates, was developed to better predict and explain individual health behaviors. Over time, this model has been applied to a wide range of health issues, including breast cancer screening in older women and sexual health behaviors in adolescents (Glanz, Rimer & Lewis, 2002). More specifically, this paradigm looks deeper into the relationship between an individual's confidence to take action (self-efficacy) if they perceive themselves to be susceptible to a condition, the identification of the potential severity of a sequelae, and evaluation of perceived benefits versus barriers (Glanz et al, 2002). When applied to physical activity engagement of older adults, this model can help explain the likelihood of an individual engaging in physical activity, based on the perceived threats brought about by inactivity and the individual's conclu-

sion that the potential benefits could far outweigh the risks (Gould & Weinberg, 1999).

The six concepts of the HBM as outlined by Glanz, Marcus-Lewis & Rimer (1997) include:

- Perceived Susceptibility
- Perceived Severity
- Perceived Benefits
- Perceived Barriers
- Self-Efficacy
- Cues to Action

### *Perceived Susceptibility*

The concept of perceived susceptibility involves one's own opinion of the probability of developing a condition (Glanz et al, 2002). A study by Khattah, Abolofotouh, Alkija, al-Humaidi & al -Wahat (1999), asked 280 older males and females to assess their risk of developing cardiovascular disease after completing their annual physicals. It was found that very few surveyed perceived their own behavior to be harmful; however, their own doctors had identified numerous risk factors, including high fat intake, obesity and/or low levels of physical activity, as potential causes of disease in those individuals. Interestingly, a study by Richmond, McCracken & Broad (1996) concluded that many older adults relying on information sources other than medical professionals, including relatives/friends and books/magazines, greatly underestimated their own susceptibility to osteoporosis and dementia as well as the significance of regular exercise. Moreover, in a study of 112 older adults, many reported a high frequency of health-promoting actions (i.e. eating well, regular medical check-ups, etc.) as they saw themselves vulnerable to serious disease; however, it was noted that they were also

less likely to use chronic, mild symptoms as illness warnings (Prohaska, Leventhal, Leventhal & Keller, 1985).

#### *Perceived Severity*

Beliefs concerning the significance of contracting an illness or condition and the subsequent medical consequences (i.e. pain, disability and death) and the social costs (the effect on an individual's work, family and social relationships) were identified as perceived severity (Glanz et al, 2002). A study of older adult's risks and attitudes toward cardiovascular disease was developed by Silgay, Muir, Coulter, Thorogood & Roe (1993). It was concluded that those identified within the surveyed group as leading a sedentary lifestyle showed a marked disparity between their own health choices and the likelihood of acquiring the disease. Furthermore, a survey of older adults with chronic conditions heavily supported the concept that an individual's psychological status, perceived severity of illness and vulnerability to complications heavily influenced rates of medication self-behaviors. (Connelly, 1993).

Stretcher & Rosenstock (1997) identified that there is a close correlation between perceived susceptibility and perceived severity and labeled it perceived threat. Based on this idea, Glanz et al (2002) recommended that the application of the Health Belief Model should first define the population at risk, personalize this risk (based on individual behavior and characteristics) and show that there is reliability between the perceived risk and actual risk as well as the negative consequences associated with the acquirement of the condition. This is strongly supported by the need to first define individual health behaviors and risk factors within a

population (Martin, 2010), and develop intervention strategies based on an individual's perceived susceptibility and severity of developing a condition (Martin, Haskard-Zolnierel, & Dimatteo, 2010). However, it should be noted that there is a lack of current research further exploring this relationship. Recommendations for future research could include investigating the impact of educating older adults on the physiology of aging and its impact on individual beliefs of susceptibility and severity. Furthermore, it could be suggested that studies examining the belief of one's perceived susceptibility versus actual risk of disease acquirement would be beneficial in future intervention strategies.

#### *Perceived Benefits*

Perceived benefits can be defined as one's belief that undertaking a recommended action could decrease the risk or severity of potential illness or disease (Glanz, et al, 2002). Kelly, Zyzanski & Alemagno (1991) examined 215 patients in a health promotion trial and found that perceived benefits were a strong predictor of health behavior change, more explicitly in the areas of smoking, stress management, diet and exercise. Additionally, older adults taking part in a new physical activity program noted many positive benefits, including a strong sense of accomplishment and enjoyment as well as enhancement to physical performance. More specifically, it was noted that there was a correlation between identified positive effects and adherence rates (Bloch, 2004). Furthermore, a study conducted by Ferrini, Edlstein & Barrett-Connor (1994), found that those aged 50 – 69 years who engaged in regular physical activity reported significant benefits to their positive health behavior and were more likely to spend

money on healthy items like nutritious food and exercise programs. As research has proven, the benefits to both functional fitness and psychological health in older adults are numerous; however, the benefits of engaging in physical activity must have clear positive effects and should easily be defined by specific actions (Glanz et al, 2002).

Paterson, Jones & Rice (2007) noted that physical activity and exercise recommendations should focus on activity specificity and type and be dependent on an individual's functional capacity and independence. However, Van der Bij & Laurant (2002) noted that there also needed to be a diverse range of individual and specific interventions for older adults to first become involved, and subsequently maintain engagement. Further research should be conducted to determine long-term success rates over a range of diverse interventions, including large scale therapeutic programs and smaller, more self-directed initiatives.

#### *Perceived Barriers*

The perceived barriers, or one's belief around the tangible and psychological costs of the advised action, are noted to be the strongest predictor to changes in health behavior (Glanz et al, 2002). Moreover, Niven (1994) found that the negative aspects associated with taking an advised action have shown to significantly impede an individual's rate of engagement. A survey of 409 randomly selected 65 – 84 year olds were asked to define barriers to their involvement in any form of physical activity. Although many reported knowing about the benefits of physical activity, those studied specifically identified pain (related to an existing condition), lack of interest, and facility accessibility as ma-

jor barriers to participation (Crombie, Irvine, Williams, McGinnis, Slane, Alder & McMurdo (2004). Furthermore, Jancey, Clarke, Howat, Maycock & Lee (2009), found that many older adults expressed a need for more individualized program interventions.

Practical applications of the Health Belief Model in the reduction of identified barriers, as noted by Glanz et al (2002), include targeted intervention, preferred incentives and correction of misinformation. As noted by Cress, Buchner, Prohaska, Rimmer, Brown, Macera, DePietro & Chodzko (2006), best practices in the engagement of older adults should include multi-dimensional programming (including aerobic, resistance, and balance and flexibility training), a strong framework for behavior change (social support and self-efficacy), choice in programming options, individualized goal setting, positive reinforcement, and management of risk (positive risk/benefit ratio). In addition, Brawley, Rejeski & King (2003) found that diversity in programming environments could also increase participation rates within this population.

More specifically, Focht, Rejecki, Ambrosius, Katula & Messier (2005) identified that control beliefs and pain management were key areas that influenced older adult participation, however, they also noted that specific interventions based on these factors could target self-efficacy and pain management to increase participation in these identified older adults. A current example, based on this application, is the CHAMPS II program, developed to better engage older adults in regular physical activity. Within this programming framework, participants were involved in choice-based physical activity programming that took into account pre-

existing conditions, current abilities, preferred activity preferences and overall health and wellness. In addition, participants were also educated in physical activity safety, the role of self-efficacy, and how to best overcome barriers. Upon evaluation of this program, it was shown that there were meaningful increases in the rates of regular physical activity and noteworthy changes to current lifestyle behaviors (Stewart, Verbincoeur, McLellan, Gillis, Rush, Mills, King, Ritter, Brown & Bortz, 2001).

When exploring accessibility issues, strong evidence shows that community or home-based exercise programs for older adults continue to be very successful (Jones & Nies, 1996). King, Haskell, Taylor, Kraemer & DeBusk (1990) identified these types of programs as reducing transportation barriers and subsequently increasing fitness levels.

More specifically, Cheadle, Eggeer, LoGerfo, Schwartz & Harris (2009) looked further into community-based intervention and promotion strategies based on the Southeast Seattle Senior Physical Activity Network (SESPAN). It was noted that, with appropriate support and resources, community-based physical activity reduced accessibility issues and aided in the creation of diverse programming opportunities for older adults within their own neighborhoods.

As illustrated above, reducing identified barriers to participation, through specific and individualized solutions have shown to have a strong correlation with the engagement of older adults in physical activity (Resnick, 2000). Based on this information, research utilizing the concepts within the Health Belief Model could help to better identify, and continually reevaluate, program interventions aimed to engage older

adults on a short-term, and more importantly, a long-term basis. It could also be beneficial to explore the relationship of identified health behaviors and changes to activity preferences as they age.

In addition, the Health Belief Model could also be used to explore the relationship between physical activity rates and individuals with multiple conditions and/or pain management issues. As one might predict, there could be a strong relationship between preferred incentives (perhaps both intrinsic and extrinsic) and the reduction of barriers in older adults; however, this area has yet to be studied longitudinally. Moreover, information is also needed to better understand engagement and adherence rates in physical activity programming based in the home, community, and in a facility, as well as the role that technology could play in the future within these environments.

#### *Self-Efficacy*

For a behavior change to be successful, an individual must have confidence in one's own ability to overcome perceived barriers and have a strong belief that a specific action will result in a positive outcome (Martin, Haskard-Zolnieriek & Matteo, 2010). A strong sense of self-efficacy makes one more likely to initiate a course of action and influence the degree of effort expended and sustained over time (Glanz et al, 2002). Additionally, Resnick, Palmer, Jenkins & Spellbring (2000) remarked that age and gender as well as current mental and physical health have a marked effect on self-efficacy and could significantly impact potential interventions.

Conn (1998) remarked that self-efficacy had a strong effect on older adults' participation

rates in physical activity, especially those who participated in sustained and lifelong exercise pursuits. This is supported by Woodward & Barry (2001), who additionally found self-efficacy was significantly important in the early (adoption) phase of an exercise program. A survey conducted with 135 men aged 55 years or older, found that those with strong self-efficacy assessed their lifestyles as more healthy and was shown to be a key component to increasing older men's perceptions of their own health and well-being (Loeb, 2004). Although there is little research around the impact of self-efficacy on physical activity rates among older adults, it does have large programming implications around the provision of appropriate training and guidance, demonstration of desired behaviour, and goal setting (Glanz et al, 2002).

Specifically, it has been shown that positive health interventions, focusing on improving self-efficacy, strengthen positive benefits seen in older adults (Resnik, 2002). As Goggin & Morrow (2001) identified, intervention strategies utilized to increase self-efficacy must be directed at the specific needs and knowledge base of older adults as well as assess an individual's knowledge and state of readiness. Furthermore, Sevic, Dunn, Morrow, Marcus, Chen & Blair (2000) recommend that participants be taught behavioral-based skills to better integrate moderate intensity physical activity into their daily lives.

By applying the Health Belief Model to self-efficacy and physical activity rates, it would be clear that there is a strong impact, not only in the initiation of physical activity, but also in long-term adherence rates of older adults. However, there is a strong need to further research

the impact of self-efficacy on training and guidance methods, goal setting practices and individualized training programs.

#### *Cues to Action*

Perhaps the newest addition to the Health Belief Model, cues to action focuses on the readiness of an individual to take action, specifically based on factors that can be internally or externally driven. These cues could include bodily events, mass media, or environmental causes. Practical application of this concept includes pertinent how-to information and population-based health promotion (Glanz et al, 2002). Brawley, Rejeski & King (2003) found specific population-based strategies were shown to be extremely beneficial and, as Goggin & Morrow (2001) noted, should be structured differently when applied to varying age groups and for the different sexes.

Potentially due to the rather new introduction of this concept, long-term impact of population-based health promotion on engagement rates has not been studied extensively. Research around this area, as well as the impact of technology on health promotion as the older adult population becomes more proficient in this area, truly deserves an in depth review.

#### **Conclusion**

The role of individual values and beliefs have a marked impact on physical activity engagement and adherence rates, and are solid predictors of current and future health behaviors in older adults. As there is little research on the strong relationship between the Health Belief Model and older adult physical activity engagement, the potential for further study could prove to be instrumental in better understanding and identify health behaviors associated with

this population and have marked effects on future interventions.

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