Self-efficacy and Physical Activity Behavior among Older Korean-Americans

Lim, Kyung Choon*

INTRODUCTION

There is increasing recognition that engaging in healthier lifestyle choices is important for population's healthy living and longevity as well as delay the process of aging (Bandura, 2004). Physical activity (PA) is one of the leading health indicators according to *Healthy People 2010* (United States Department of Human Services [US DHHS], 2001). PA can be a method to increase older people's health perception, to maintain independence within the context of their everyday lives, and to reduce their risk of diseases. Minority populations in the US have relatively poor health and appear to be more inactive than their Caucasian counterparts (Stewart, Mills, King, Haskell, Gillis, & Ritter, 2001). As a consequence, there is an increased demand for optimal, specialized, culturally-focused care for the older population that focuses on health promotion and disease prevention. Review of current literature shows that exercise was rated lowest in health promotion behavior among older Korean-Americans (OKAs) (Sohng, Sohng, & Yeom, 2003) and adult Korean immigrants (Kim & Song, 1997). However, there are little empirical data available on the factors that may predict regular PA behavior in OKAs.

Understanding the factors that explain PA in the elderly will help to structure interventions and motivate this population to engage in a regular PA program (McAuley, Lox, & Duncan, 1993; Resnick, 2001). Therefore, promoting and protecting the health of OKAs by developing optimal levels of PA based on theoretical frameworks and the knowledge of ethnic and cultural influences on PA deserves attention as a means of improving their quality of life. A number of psychological components (e.g. self-efficacy [SE], depression) are posited to influence participation in PA. SE has been shown to be related directly to PA (Resnick & Nigg, 2003) as well as to be a reliable predictor of PA maintenance over time in the general population (McAuley et al., 1993) and in older

adults (Resnick, 2001). Thus, the purpose of present study was to explore relationship between SE and PA among OKAs based on reviewing the major theoretical models that are used to understand PA behavior, particularly as they relate to older adults within sociocultural contexts.

Several theories and models have been conceptualized and tested empirically to address the complexities associated with human behavior, especially as it relates to PA (Bauman, Sallis, Dzewaltowski, & Owen, 2002; Dishman, 1994). *Transtheoretical Model of Change* (TTM) focuses on the dynamic nature of health behavior change and presumes that people are at different cognitive and performance levels with regard to a particular behavior and that predictors of future behavior will vary across those levels (Prochaska & Marcus, 1994). The stages of change describe the temporal aspect of the adoption and maintenance of behavior, which are considered to be two different phenomena. Adoption represents initiation of the behavior or getting people started, which is generally followed by a period of thought or contemplation. Maintenance represents successful management of factors affecting the continuation of the behavior.

According to the TTM, individuals experience a series of five stages of motivational readiness for change in a sequential manner: (a) precontemplation (no intent to change behavior within 6 months), (b) contemplation (intending to be active within 6 months), (c) preparation (intending to be active within 30 days), (d) action (engaged in the new behavior for less than 6 months), and (e) maintenance (regularly engaged in the new behavior for more than 6 months). This model is often used to explain the stages people pass through, including cognitive and behavioral processes they use to change behavior, allowing the interventionist to establish more realistic expectations of the person (Dunn, 1996). This theory was originally used to study change in smoking cessation behavior (Prochaska & DiClememte, 1983), and has been used to study behavioral change for PA. Challenges of the TTM are using it to measure group-level change, designing culturally sensitive matched interventions for diverse populations, and knowing what are the minimum interventions needed to accelerate progress at each stage (Jordan, Nigg, Norman, Rossi, & Benisovich, 2002).

Health Belief Model (HBM) is a value-expectancy model that was initially developed to explain the failure of people to participate in primary and secondary level disease prevention programs (Janz, Champion, & Strecher, 2002). Later iterations of the model focused on people's behaviors in response to diagnosed illness and their adherence to treatment regimens (Becker, 1974). In the HBM, the motivation to act arises from the expectation that the action can reduce the likelihood or severity of harm. The major cognitive appraisal processes are perceived susceptibility, severity, benefits and barriers, cues-to-action, and SE. The perceived susceptibility and SE variables have been shown to enhance intentions to engage in PA, even when people hold weak beliefs about its effectiveness and are not convinced of their at-risk status (Wurtele & Maddux, 1987). The HBM has been demonstrated to be useful in understanding health behaviors in multicultural settings, but it is important to consider if the underlying assumptions of the model regarding the value placed on health and illness are consistent with the cultural beliefs in the target population so as not to "blame the victim" (Wilcox, Richter, Henderson, Greaney, & Ainsworth, 2002).

Theory of Reasoned Action (TRA) includes measures of attitude and social normative perceptions that determine behavioral intention,

which in turn affects behavior (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). *Theory of Planned Behavior (TPB)* is an extension of TRA. It adds the construct concerned with perceived control over performance of behavior; it attempts to understand and predict behaviors that are not entirely under individual control (Ajzen, 1991). Perceived behavioral control is the most important predictor in TPB, while intention is a direct determinant of behavior in TRA. Perceived behavioral control has been viewed as a construct conceptually related to the concept of perceived SE—one's confidence in performing a specific behavior (Bandura, 1986, 1997, 2004). Consequently, people intend to initiate a health behavior when they evaluate it positively, believe that others think they should perform it, and perceive it to be under their own control; thus, intention is essential in defining the early stages of readiness (Ajzen, 1991; Courneya, 1995).

Both TPB and TRA assume that all other factors, including demographics and environment, operate through the model constructs and do not contribute independently to explaining the likelihood of a person's performing a behavior. Research findings indicate that attitude and perceived control beliefs, but not social norms, are important predictors of PA in older adults (Michels & Kugler, 1998) and older women (Conn, Tripp-Remer, & Maas, 2003). In contrast, Courneya (1995) found that stages of readiness for regular PA, which is discrete phases from inactive to active, were related to beliefs concerning social norms as well as attitude and perceived control beliefs.

Social Cognitive Theory (SCT) presumes individuals are social beings who derive their sense of self and personal efficacy from others through interpersonal exchanges, and that the interpersonal environment is critical in affecting and predicting one's health behavior and, in turn, health outcomes (Bandura, 1986, 1997, 2004). SCT is a multidimensional framework that supports the idea of a reciprocal relationship between behavior, the individual, and environment (Bandura, 1986, 1997). Reciprocal determinism is the view that personal factors (e.g., cognition, affect, and biological events of the OKAs), behavior (e.g., intensity, frequency, duration, and type of PA), and environmental influences (e.g. Korean cultures, socioeconomic status, education, and family structure) create interactions that result in a triadic reciprocality. The reciprocal nature of the determinants of human functioning in this theory makes it possible for therapeutic and counseling efforts to be directed at personal, environmental, or behavioral factors. Therefore, strategies for changing behaviors can be aimed at improving emotional, cognitive, or motivational processes, increasing behavioral competencies, or altering the social conditions under which people live.

Bandura (1997) advances a view of human behavior adoption and change that accords a central role to cognitive, vicarious, self-regulatory, and reflective processes—all of which play a critical role in people's capability to construct reality, encode information, and perform behaviors. People are viewed as proactive rather than as reactive organisms, shaped and shepherded by environmental forces or driven by concealed inner impulses. According to Bandura, human motivation and action are regulated by forethought. Cognitive control of behavior is based on two principles: (a) SE expectations—belief in one's capabilities to perform a course of action in order to attain a desired outcome, and (b) outcome expectations—belief that a certain consequence will be produced by personal action. SE and outcome expectations are behavior-specific and dynamic, and theoretically, they are both appraised and enhanced by four

mechanisms: mastery experiences, vicarious experiences, verbal and social persuasions, and physiological and affective states such as joy, pain, fatigue, or anxiety associated with a given activity. A mastery experience involves perfor-mance accomplishment and is one of the most influential ways to foster perceived efficacy, especially when one's personal capability to perform an activity is perceived to be successful. When people are uncertain about their own capabilities or have limited previous experience with a certain activity, vicarious experience may serve as a model to alter perceived efficacy through transmission of competencies and comparisons to others' performance. Verbal and social persuasions through encouragement from experts and social support may also cultivate SE that one possesses the ability to perform a certain activity, when it is considered as being a realistic goal. Finally, physiological and affective states can facilitate an individual's confidence and judgment of perceived physical ability to perform a particular behavior, such as PA (Bandura, 1986, 1997, 2004).

Commonly used models of PA behavior in older adults and ethnic minorities that are described briefly in this article are TTM (Prochaska & DiClemente, 1983), HBM (Becker, 1974), TRA and TPB (Fishbein & Ajzen, 1975), and SCT (Bandura, 1986, 1997, 2004). The TTM, HBM, TRA, and TPB are intrapersonal theories of health behavior that do not take into consideration one's sociocultural and environmental context. Unlike the other commonly used and known health behavior theories, SCT operates at the interpersonal level. Similar to other theoretical models, SCT can be used to understand health promotion behavior, such as PA. Dzewaltowski et al (1990) studied the prediction of four weeks of PA participation within the conceptual context of the SCT, TRA, and TPB. They reported that the SCT's SE construct was a better predictor of PA than the TPB's perceived control construct and the TRA's behavioral intention construct (Dzewaltowski, Noble, & Show, 1990). Other researchers have reported similar findings for the predictability of SCT in PA research (Bauman et al., 2002).

Within the Korean culture and as presumed in the SCT and the nursing paradigm, health promoting behavior, such as PA, is concep-tualized as the desire for a higher level of health rather than a fear of disease as is proposed by other health behavior theories. SCT with the integration of Korean culture recognizes cultural, developmental, societal, and other external constraints that may help in formulating PA interventions and better understanding the limits faced by OKAs to encourage them to engage in regular PA.

Definition of terminology: PA is an umbrella term, which includes exercise. The National Institutes of Health (NIH, 1995) defines PA as "bodily movement produced by skeletal muscles that requires energy expenditure and produces progressive health benefits," while exercise is described as "a planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness" (p. 6). In this study, the operational definition of PA was planned or unplanned bodily movement which includes all leisure, occupational, or household activities that require energy expenditure and are part of everyday life considering personal choices and situations. Bandura defined SE as "people's judgments of their capabilities to organize and execute causes of action required to attain designated types of performances (1997, p. 391)." In this study, SE was the strength of individual confidence that each person could perform PA routines regularly (three or more times per week) when faced with the various circumstances listed. In present

study, OKAs are who were born in Korea and moved to the US, community-dwelling in the area of San Francisco Bay Area, and spoke predominantly Korean.

METHODS

Design: This was a descriptive study with convenience sampling.

Subjects: The people who were either active or sedentary, ≥ 65 years of age, ambulatory, community-dwelling, and literate Korean-American were eligible. This study excluded subjects with the presence of debilitating conditions such as severe cognitive impairment, any severe musculoskeletal problem that would make habitual exercise not possible, metastatic cancer, crippling arthritis, severe Parkinson's disease, major stroke, or profound visual deficits that can compromise balance or ambulation. For screening and finding of the number of health problems relating to PA that OKAs may have, possible health problems were asked.

Measures: OKAs are target population; thus, all instruments were prepared in Korean.

Physical activity: 41-item K-CHAMPS questionnaire was administered by face-to-face interview. Detailed information on the K-CHAMPS questionnaire will be described in elsewhere (Lim, 2007). The 2-week test-retest reliability for CHAMPS caloric expenditure measure for all listed PAs is 0.66, and for moderate and greater intensity activities is 0.67 (Stewart et al., 2001). In this study, the author calculated caloric expenditure (CE) per week from 28 out of 41 items for all activities and 20 out of 41 items for at least moderate intensity activities. The sample was divided into low and high CE groups based on median split (1109 kcal/week for all activities and 112 kcal/week

for at least moderate intensity activities) because the distribution was skewed to the left.

Self-efficacy: Exercise self-efficacy scale is an 18-item tool. Participants rated themselves from 0 to 100% how confident they were that they could perform regular exercise when faced with the various circumstances known to impede exercise participation. This instrument was translated and backward translated into Korean by Shin and colleagues (2001). There was an effort to select words that were easier to understand and yet be consistent with the original intent of the measure. An expert Korean panel (15 chronic disease adults, 3 nursing faculty members, 1 nursing postdoctoral fellow, and 1 nursing doctoral student) reviewed each item and assessed the appropriateness of translation for comprehension; then, awkward translations were changed into free translation (Shin, Jang, & Pender, 2001).

Psychometric testing of the scale in Korean version was conducted by Shin et al (2001); internal consistency was very high (standardized Cronbach alpha coefficient =0.94); the correlation coefficient for 2-week test-retest reliability was 0.77, indicating this scale is relatively stable; and face validity was evaluated and ascertained by the expert panel. Three factors believed to be important in determining exercise SE for Korean were included in an 18-item scale as described for each item within a subfactor in table 2. They were categorized as situational/interpersonal subfactor (six items that were situational or interpersonal influence on exercise SE), competing demands subfactor (five conditions over which individuals had little control), and internal feeling subfactor (seven items represented internal feelings or emotions which influenced exercise SE). The results of factor analysis were consistent with Bandura's original exercise self-efficacy scale, and explained 77.5% of the variance by a single factor structure, but

three factors explained 96.4% of the variance (Shin et al., 2001). In this study, Cronbach's alpha was 0.97. The range was 0-100 in this sample and cutoff point for the analysis was 70 based on previous studies. Scores 70 and more were considered as higher SE.

Body mass index (BMI): The weight and height were measured by calibrated scales and weight (kg)/height^2 (m) is used to calculate BMI.

Data collection and analysis: Approval for this study was obtained from the Committee on Human Research (CHR) at the University of California, San Francisco (UCSF). The sample was composed of 151 OKAs. Each of whom was interviewed once to complete the questionnaires. The data collection began 2004 and ended 2005. Subjects were recruited from two senior centers and six retirement apartments located in San Francisco Bay Area through announcements at gathering sites, posting flyers in prominent locations, telephone contact, individual interactions, and word-of-mouth. Statistical Package of Social Sciences (SPSS, version 12.0) program was used to conduct the statistical data analysis. To describe the study population and their PA, actual numbers for frequency, mean with standard deviation (SD), median with range and proportion were used. Median values were used for data that showed skewed distribution. Mean and SD were used to examine the perception of SE related to PA. T-test and ANOVAs were employed to explore SE patterns by variables. To examine the correlation between self-efficacy, education, income, marital status, gender, age, BMI, and physical activity level, Pearson's correlations were used with all the categorical variables. The acceptable level of significance for all analyses was determined by a p value less than .05 (two-tailed).

RESULTS

The sample was consisted of 151 community-dwelling OKAs in San Francisco Bay Area, California. 122 females (80.8%) and 29 males (19.2%) participated in present study The mean age was 77.5 (± 6.4), ages 65 – 93 years. Most (60%) had lived in the US for 20 years or more and the average length of staying in the US was 20.1 (± 7.8). Most are Protestant (82.8%). 59.6% of them were widowed and live alone. 62.9% of the subjects completed elementary or middle school. Average annual income was $ 9,161.8 (± 3,267.5).

The perceived SE relating to PA among OKAs is shown in <Table 1>. There were significant (p < .05) differences of SE in religion, frequency for moderate and greater PA, CE for moderate and greater PA, and CE for all listed PA. The OKAs who had engaged in more than once per

<Table 1> The self-efficacy for physical activity in older Korean-Americans　　　　　　　　(N=151)

Variables	Classification	Self-Efficacy		t or F	p
		N (%)	Mean ± SD		
Gender	Female	122 (80.8)	37.40 ± 29.49	1.02	.48
	Male	29 (19.2)	44.64 ± 28.33		
Age	65-74	53 (35.1)	40.87 ± 29.52		
	75-84	71 (47.0)	37.03 ± 28.37	1.27	.16
	> 85	27 (17.9)	39.32 ± 32.15		
BMI	Underweight	9 (6.0)	46.73 ± 31.55		
	Ideal weight	62 (41.1)	39.92 ± 28.04	.86	.75
	Overweight	68 (45.0)	37.84 ± 30.67		
	Obese	12 (7.9)	32.41 ± 28.33		

<Table 1> The self-efficacy for physical activity in older Korean-Americans(continued)　　　(N=151)

Variables	Classification	Self-Efficacy N (%)	Self-Efficacy Mean ± SD	t or F	p
Education	< High school	95 (62.9)	37.69 ± 30.10		
	≥ High school	56 (37.1)	40.65 ± 28.13	1.14	.30
Marital Status	Widowed/Separate/Divorced	90 (59.6)	38.41 ± 30.27		
	Married	61 (40.4)	39.35 ± 28.11	1.10	.36
Religion	Christian	125 (82.8)	37.75 ± 28.98		
	Buddhism/None/Others	26 (17.2)	43.80 ± 31.03	1.57	.03*
Years in America	1-9 years	16 (10.6)	41.88 ± 31.93		
	10-19 years	44 (29.1)	34.08 ± 30.77	1.38	.09
	20-29 years	65 (43.0)	41.61 ± 29.74		
	≥ 30 years	26 (17.2)	37.82 ± 24.24		
Annual Income	$ 0 - 9,840	139 (92.1)	39.06 ± 29.71	.83	.79
	> $ 9,840	12 (7.9)	35.65 ± 25.36		
Frequency for moderate & greater PA	< 1^+ per week	76 (50.3)	31.54 ± 29.20	1.75	.01*
	≥ 1^+ per week	75 (49.7)	46.13 ± 27.75		
Frequency for all listed PA	< 14^+ per week	81 (53.6)	33.18 ± 30.22	1.42	.07
	≥ 14^+ per week	70 (46.4)	45.28 ± 27.04		
CE for moderate & greater PA	< 112^+ kcal/week	75 (49.7)	32.18 ± 29.26	1.54	.04*
	≥ 112^+ kcal/week	76 (50.3)	39.32 ± 32.15		
CE for all listed PA	< 1109^+ kcal per week	76 (50.3)	29.78 ± 29.57	1.56	.03*
	≥ 1109^+ kcal per week	75 (49.7)	47.92 ± 26.25		

BMI: body mass index, weight (kg)/height^2 (m)　　　CE: caloric expenditure per week
+ Median number for each measure　　　　　　　* p < 0.05

<Table 2> Mean score of exercise self-efficacy of older Korean-Americans　　　　(N=151)

Factor	Mean	SD	Minimum	Maximum
Situational/interpersonal sub-factor (six items)	33.07	30.89	0	100
When I have too much work to do at home				
When visitors are present				
When there are other interesting things to do				
During a vacation				
When I have other time commitments				
After experiencing family problems				
Competing demands sub-factor (five items)	44.93	31.45	0	100
After recovering from an injury that caused me to stop exercising				
After recovering from an illness that caused me to stop exercising				
After a vacation				
If I don't reach my exercise goals				
Without support from my family or friends				
Internal feeling sub-factor (seven items)	39.31	30.25	0	100
When I am feeling tired				
When I am feeling under pressure from work				
During bad weather				
During or after experiencing personal problems				
When I am feeling depressed				
When I am feeling anxious				
When I feel physical discomfort when I exercise				
Total exercise self efficacy (18 items)	38.79	29.32	0	100
Low (< 70)				
High (≥ 70)				

week for moderate and greater PA showed higher SE than did those who had never engaged in PA. Also, OKAs who expended more calories from moderate and greater PA as well as all listed PA showed higher SE than did those who had less CE.

The mean scores on SE relating to PA are shown in <Table 2>. 122 OKAs, 80.8% (82.8% of women and 72.4% of men), in this study had relatively low (< 70) SE relating to PA. The mean score of total SE was 38.8 (± 29.3). The mean score on the competing demands subfactor was the highest (44.9 ± 31.5) and it was lowest (33.1 ± 30.9) on the situational/interpersonal subfactor.

<Table 3> shows that SE was statistically significant and positively associated with frequency for moderate and greater PA (r = 0.25, p < .01), frequency for all listed PA (r = 0.21, p < .05), CE for moderate and greater PA (r = 0.23, p < .01), and CE for all listed PA (r = 0.31, p < .01).

DISCUSSION

The health behavior theories described in this article postulate that health behavior is rooted in cognitive processes at the individual level. These theories emphasize the importance of decision-making, although each theory proposes different key causes of behavior. All of the theories discussed can aid in understanding the correlates of PA in older, ethnic minority populations because they recognize societal, organizational, and other external constraints placed on the elderly that may help in the formulation of a better understanding of the limits faced by older adults in their pursuit of routine PA.

For PA behavior, the highest likelihood for relapse occurs within the first 6 months of starting a program (Dishman, 1994; Dunn, 1996). One can test if the distinction between stages is arbitrary and useful merely for description, or if true stages of PA behavior do indeed exist (Weinstein, Rothman, & Sutton, 1998). Bandura argues that the stages of change for PA merely reflect arbitrary pseudo-stages rather than genuine stages. When people try to change their health behavior, they experience both successes and failures (Jordan et al., 2002). Some people may relapse after beginning a program, then restart; others may change abruptly their behavior. This cyclic process or bypassing of stages does not fit the basic tenets of the TTM, which presumes that the process of change is unique at each stage and occurs in a linear manner. Bandura posits

<Table 3> Correlations between exercise self-efficacy and other categorical variables   (N=151)

	1	2	3	4	5	6	7	8	9	10	11
1. Gender	----										
2. Age	-.02	----									
3. BMI	.09	-.27**	----								
4. Education	.25**	-.04	-.19*	----							
5. Marital status	.42**	-.20*	-.03	.12	----						
6. Annual income	-.14	-.22**	-.02	.23**	.21*	----					
7. Frequency for moderate & greater PA	.12	-.18*	-.10	.22**	.05	.05	----				
8. Frequency for all listed PA	.12	.10	-.08	.22**	.05	.12	.48**	----			
9. CE for moderate & greater PA	.11	-.20*	-.05	.24**	.06	.05	.96**	.50**	----		
10. CE for all listed PA	.26**	-.18	.09	.20*	.18*	.05	.55**	.51**	.56**	----	
11. Self-efficacy	.10	-.047	-.09	.05	.02	-.03	.25**	.21*	.23**	.31**	----

BMI: body mass index, weight(kg)/height(m^2)   CE: caloric expenditure per week
* P < 0.05   ** p > 0.01

that behavior cannot be sectioned at 6 months into different stages that propel an individual from one stage to the next stage simply because of the passage of time.

SE is a common pathway of psychological influences and affects each of the basic processes of personal change (Bandura, 2004) and it serves as a mediator, moderator, or confounder in different contexts (Bauman et al., 2002). The principle of SE suggests that the stronger an individual's SE and outcome expectations are, the more likely he or she will initiate and persist with a given activity. People make judgments about their capacity to engage in PA behavior or to produce desired effects and consequences. These judgments provide the bridge between knowledge and health behavior. Thus, there should be a positive correlation between SE expectations and self-reported PA behavior. SE beliefs influence the type of activities a person chooses, the degree of effort, and level of perseverance toward a goal despite failure and adverse conditions.

Researchers in Korea also have supported the importance of SE in health behavior (Shin et al., 2001). In Korean-American elderly, age, gender, perceived health status, SE, and socioeconomic status are predictors of their health behavior (Sohng et al., 2002). Similar to other studies, SE had significant and positive correlations with the current PA level in this study. OKAs who were more confident in their ability to PA were more likely to report some activity than were those who were less confident. Thus, SE should be considered as a motivating factor prior to an intervention study. However, the correlation between SE and PA was weak. One possible explanation for the weak association is that external factors, such as attending religious services, may be more critical to PA behavior than self-confidence in one's ability to engage in regular PA. Another

reason may be due to the insufficient PA level in this study and median values were used as cutoff point for the data that showed skewed distribution. Using the public standards for engaging in regular (> 5 times/wk) moderate intensity PA, the results of the association between SE and PA in OKAs need to be reassessed. Among OKAs, the situational/interpersonal subfactor (i.e. visitors, vacation, or family problems) was perceived as the most interfering factor to overcome for regular PA. This finding is consistent with the result of Korean adults with chronic disease (Shin et al., 2001) and Korean's traditional way of thoughts and living in terms of valuing highly social relationships.

Lim (2007) reports from the same participants of this study that 66.9% of OKAs (71.3% of women and 48.3% of men) were less active than public health recommendations; 44.4% of OKAs (31.0% of men and 47.5% of women) did not activity at all in at least moderate intensity PAs that performed at 55% to 70% of one's maximal heart rate, needed three or more metabolic equivalents, enough to expend approximately 200 Calories per day (kcal/day), and the equivalent of brisk walking at 3 to 4 mile per hour for most healthy adults; Less than 27.8% of OKAs are sufficiently active to achieve the full range of health benefits; and 50.3% of subjects did not PA more than one times per week in at least moderate intensity PAs. Therefore, there is a need to find safe and effective ways to encourage OKAs to become physically active and get health benefits from engaging in regular (> 5 times/wk) moderate intensity PA. Based on considering the preferences and current level of lifestyle PA among OKAs, it is essential to develop a feasible PA program that begins with a level of intensity below each individual's physical capacity and emotional status, and gradually

builds on early accomplishments.

This was a descriptive study. Thus, this study precludes firm causal relationships between PA level and SE and cannot rule out survival and mobility bias. Additionally, the convenience sampling method the author used as well as the study inclusion and exclusion criteria may result in selection bias. Recall bias could be a problem since participants were asked to report PA in a typical week over the past four weeks. Generalizability of the findings might be limited to California climates as only subjects were recruited from the San Francisco Bay Area. Despite the limitations of this study, there are several strengths: this is the first study that addressed about OKA by a gerontological nurse, who is bicultural and bilingual and was able to appreciate the issues of this population in a culturally sensitive manner, this eliminating cultural and language barriers. Also, the investigator visited retirement apartments to recruit sedentary or inactive OKAs to minimize the mobility bias from this sample. In addition, the author obtained a roster from facilities or other information sources and then called subjects to recruit them.

CONCLUSION

PA is too complicated behavior to be encompassed by a single theory, however, SCT is a framework that can help identify what needs to be known before developing and organizing a PA intervention for OKAs. SCT including SE can provide insight about how to shape strategies that encourage OKAs to adhere to regular PA because it focuses on environ-mental as well as personal factors. Using SCT as a theoretical framework, a researcher can aim to improve OKAs' emotional states, correct faulty self-beliefs and habits of thinking (personal factors), improve knowledge and self-regulatory practices (behavior), and alter the living environmental structures that work to undermine successful behavioral changes (environmental factors). Often immigration and developmental life changes affect social and environmental factors for OKAs who are in transition. Treating humans as thinking organisms enables investigators to understand fully why people behave the way they do (Bandura, 1996).

It is important for health care providers to recognize the wide range of PA level when screening for health behaviors. Many studies identify the importance of PA for healthy aging, but little is known about which factors contribute to being physically active among older adults from different cultural and ethnic backgrounds. The relationships of personal, social, cultural, environmental, and policy variables with PA among ethnic minority groups including OKAs need to be explored. If nurses or other health providers understand the OKAs' reasons for and barriers to including PA regularly based on the knowledge of theoretical frameworks for health behavior, then they can intervene more effectively to increase PA in this population. Thus, understanding the SE relating to PA should be a valued goal of nursing practice to motivate OKAs who are sedentary or irregularly active. Increased efforts are needed to understand the other factors associated with being active in OKAs.

References

Ajzen, I. (1991). The theory of planned behavior. *Organ Behav Hum Decis Process, 50*, 179-211.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, N.J.: Prentice-Hall.

Bandura, A. (1986). *Social foundations of thought*

and action: A social cognitive theory. Englewood Cliffs, N.J.: Prentice-Hall.

Bandura, A. (1997). Self-Efficacy the exercise of control. W. H. Freeman and Company, New York.

Bandura, A. (2004). Health promotion by social cognitive theory. Health Educ Behav, 31(2), 143-164.

Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. Am J Prev Med, 23(2S), 5-14.

Becker, M. H. (1974). The health belief model and personal health behavior. Health Educ Monogr, 2, 324-473.

Conn, V. S., Tripp-Remer, T., & Maas, M. L. (2003). Older women and exercise: Theory of planned behavior beliefs. Public Health Nurs, 20(2), 153-163.

Courneya, K. S. (1995). Understanding readiness for regular physical activity in older individuals: An application of the theory of planned behavior. Health Psychol, 14(1), 80-87.

Dishman, R. K. (1994). Motivating older adults to exercise. South Med J, 87(5), S79-S82.

Dunn, A. L. (1996). Getting started—A review of physical activity adoption studies. Br J Sports Med, 30, 193-199.

Dzewaltowski, D. A., Noble, J. M., & Show, J. M. (1990). Physical activity participation: Social cognitive theory versus the theories of reasoned action and planned behavior. J Sport Exerc Psychol, 12(4), 388-405.

Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, M.A.: Addison- Wesley.

Janz, N. K., Champion, V. L., & Strecher, V. J. (2002). The health belief model. In K.

Glanz, B. K. Rimer, & F. M. Lewis (Eds), Health behavior and health education theory, research, and practice(3rd Ed.). San Francisco: Jossey-Bass.

Jordan, P. J. Nigg, C. R., Norman, G. J., Rossi, J. S., & Benisovich, S. V. (2002). Does the trans theoretical model need an attitude adjustment? Integrating attitude with decisional balance as predictors of stage of change for exercise. Psychol Sport Exerc, 3, 65-83.

Kim, M. J. & Song, H. J. (1997). Predictors of health promoting lifestyle for the Korean immigrants in the USA. J Korean Acad Nurs, 27, 341-352.

Lim, K. C. (2007). K-CHAMPS questionnaire and the level of physical activity among older Korean-Americans. Manuscript submitted for publication.

McAuley, E., Lox, C., & Duncan, T. E. (1993). Long-term maintenance of exercise, self-efficacy, and physiological change in older adults. J Gerontol Psychol Sci, 48, 218-224.

Michels, T. C. & Kugler, J. P. (1998). Predicting exercise in older Americans: using the theory of planned behavior. Mil Med, 163(8), 524-529.

National Institutes of Health. (1995). NIH consensus statement: physical activity and cardiovascular health. NIH, Bethesda, MD, 13, December 18-20.

Prochaska, J. O. & DiClememte, C. C. (1983). Stages and processes of self-change of smoking. J Consult Clin Psychol, 51, 390-395.

Prochaska, J. O. & Marcus, B. H. (1994). The transtheoretical model: Applications to exercise. In R. K. Dishman(Ed.), Advances in exercise adherence(pp. 161-180). Champaign, IL: Human Kinetics.

Resnick, B. (2001). Testing a model of exercise behavior in older adults. Res Nurs Health,

24, 83-92.

Resnick, B. & Nigg, C. (2003). Testing a theoretical model of exercise behavior for older adults. *Nurs Res, 52*(2), 80-88.

Shin, Y. H, Jang, H. J., & Pender, N. J. (2001). Psychometric evaluation of the exercise self-efficacy scale among Korean adults with chronic diseases. *Res Nurs Health, 24*, 68-76.

Stewart, A. L., Mills, K. M., King, A. C., Haskell, W. L., Gillis, D., & Ritter, P. L. (2001a). CHAMPS physical activity questionnaire for older adults: Outcomes for interventions. *Med Sci Sports Exerc, 33*(7), 1126-1141.

US Department of Health and Human Services (2001). *Healthy People 2010*. US Department of Health and Human Services, Washington, DC, Retrieved May 15, 2000 from the US Department of Health and Human Services Web site, http://www.health.gov/healthypeople/ *Document/volume1*

Weinstein, N. D., Rothman, A. J., & Sutton, S. R. (1998). Stage theories of health behavior: Conceptual and methodological issues. *Health Psychol, 17*, 290-299.

Wilcox, S., Richter, D. L., Henderson, K. A., Greaney, M. L., & Ainsworth, B. E. (2002). Perceptions of physical activity and personal barriers and enablers in African-American women. *Ethn Dis, 12*(3), 353-362.

Wurtele, S. K. & Maddux, J. E. (1987). Relative contributions of protection motivation theory components in predicting exercise intentions and behavior. *Health Psychol, 6*(5), 453-466.

- Abstract -

Self-efficacy and Physical Activity Behavior among Older Korean-Americans

Lim, Kyung Choon*

Purpose: The purpose of present study was to explore relationship between physical activity (PA) behavior and self-efficacy among older Korean-Americans (OKAs) based on reviewing major theories that are used to understand PA behavior, particularly as they relate to older adults within sociocultural contexts. **Methods:** 151 OKAs, living in California, were recruited and interviewed once. Self-efficacy and PA level were measured by Exercise Self-Efficacy Scale, Community Healthy Activities Model Program for Seniors (K-CHAMPS) questionnaire, respectively. **Results:** 82.8% of OKA women and 72.4% of OKA men had relatively low (38.8 ± 29.3) self-efficacy related to PA. Exercise self-efficacy was statistically significant and positively associated with frequency for moderate and greater PA ($r = 0.25$, $p < .01$), frequency for all listed PA ($r = 0.21$, $p < .05$), caloric expenditure for moderate and greater PA ($r = 0.23$, $p < .01$), and caloric expenditure for all listed PA ($r = 0.31$, $p < .01$). **Conclusion:** Social Cognitive Theory including self-efficacy can provide insight about how to shape strategies that encourage OKAs to adhere to regular PA because it focuses on environmental as well as personal factors. Increased efforts are needed to understand the other factors associated with being active in OKAs.

Key words: Self-efficacy, Physical activity, Older Korean-American

* Senior Researcher, The Research Institute of Nursing Science, College of Nursing, Seoul National University