

The Theory of Planned Behavior and the Transtheoretical Model in Exercise Contexts: Korean Studies

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This paper reviewed Korean studies in an attempt to verify the generalizability of the theory of planned behavior (TPB) and the transtheoretical model (TTM) in exercise settings. Overall, the studies were in general agreement with the previous findings reported by Western countries. Furthermore, this paper proposed a causal model of exercise behavior incorporating the TPB and TTM constructs, and preliminarily validated using Korean older adults. Their exercise intentions and behaviors were continuously changed under the influence of cognitive and behavioral strategies and social cognitive variables (attitude, group conformity and self-efficacy). Finally, research directions were discussed to extend the cross-cultural generalizability of the theoretical frameworks of exercise behavior.

key words: Theory of Planned Behavior, Transtheoretical Model, Exercise

Introduction

Regular exercise leads to enhanced physical health as well as a variety of social-psychological benefits for the general public. A number of studies have showed that exercise reduces risks of various diseases (e.g., osteoporosis, obesity, diabetes, and stroke), and positively relates to human mental health (Landers & Arent, 2001). However, there is evidence that a large portion of the Korean population does not participate in regular exercise: 34.3% of Korean adults never exercise, and 32.5% of them participate in exercise fewer than three times per week (Kim, Cardinal, & Lee, 2006). Furthermore, approximately 50% of people who start exercise programs relapse within six months (Dishman, 1988).

Such awareness has led to a large amount of research related to determinants of

exercise behavior and theoretical models regarding why people intend to participate in exercise and how people continue chosen exercise for a long time. Theoretical models enable us to understand complex networks of variables and possible underlying mechanism for exercise behaviors (Buckworth & Dishman, 2001). Research on exercise and behavior changes has examined a variety of models and theories to explain and predict the adoption and maintenance of exercise behaviors, such as belief attitude theories (e.g., health belief model, theories of planned behavior), the competence-based theories (e.g., self-efficacy theory), control-based theories (e.g., self-determination theory), and decision-making theories (e.g., transtheoretical model) (Biddle & Nigg, 2000). Theoretical understanding for exercise behavior changes is an important step in developing interventions to encourage people to participate in regular exercise.

Two of the most frequently studied models of exercise behavior change are the theory of planned behavior (TPB: Ajzen, 1991) and the transtheoretical model (TTM: Prochaska & DiClemente, 1983). Basically, the TPB is regarded as a continuous model that individuals are placed along a continuum that reflects the likelihood of action. This model assumes that the higher the intention, the more likely the corresponding exercise behavior. However, the TTM is regarded as a stage model that individuals move through discrete stages while preparing and realizing behavior change. This model assumes that individuals at different stages will think and behave in different ways (Lippke, Ziegelmann, & Schwarzer, 2005).

For more than a decade, a number of studies across a wide range of populations and settings provided strong support for the utility and applicability of these theoretical models for explaining exercise behavior changes (Downs & Housenblas, 2005; Marshall & Biddle, 2001). However, most of the studies have been conducted in Western countries. Korean culture is characterized by collectivism and Confucianism among group members, whereas the Western cultures tend to place a high value on independence and horizontal relationships. Since human behaviors are subject to societal and cultural influences, it is plausible to assume that psychological constructs and processes in exercise may vary and be functional in a particular society and culture (Yoo, 2006).

A series of studies attempted to verify the generalizability of the TBP and TTM in exercise settings in Korea. Major findings from the studies independently conducted in Korea will be briefly presented in this paper. In the line of methodological strategies adopted from the studies in Western countries, the first

and the second part of this paper were concerned with validation of the TPB and TTM, respectively. The final part of this paper attempted to propose and preliminarily examine an exercise behavior model integrating the TPB and the TTM.

Theory of Planned Behavior

The TPB was originally developed from the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975). The TRA emphasizes behavioral intention. Behavioral intention is hypothesized to be the direct determinant of behavior, and is, in turn, determined by attitude and subjective norm: Behavior ~ Intention = Attitude + Subjective Norm. Attitude simply refers to an individual's affective reactions to the specific behavioral, and subjective norm refers to the perceived social pressure to perform the behavior. Ajzen (1991) developed the TPB, including a perceived behavioral control to the TRA: Behavior ~ Intention = Attitude + Subjective Norm + Perceived Behavioral Control. Perceived behavioral control is defined as the person's belief as to how easy or difficult the performance of the behavior is likely to be. The TPB postulates that perceived behavioral control has both a direct effect on behavior and an indirect effect through behavioral intention.

Yoo and Kim (1999) conducted a study to compare the TRA and the TPB for predicting participants' intentions to exercise among Korean college students. A total of 210 college students completed a battery of questionnaires that were described as dealing with the respondent's views regarding participation in a variety of indoor and outdoor exercises. The results of hierarchical regression analyses indicated that the two models significantly predict intention to exercise for Korean students. All constructs of the models (attitude, subjective norm, perceived behavioral control) significantly predicted intention to participate in exercise. However, the predictive power of subjective norm was weak. Perceived behavioral control was the most significant contributor to the prediction of intention. The TPB was found to account for a substantially greater percentage of the behavioral intention variance than did TRA. The similar result was found in the study using 530 Korean adults (Yoo & Kim, 2002).

Yoo (2006) extended the previous study examining the TPB by including exercise behavior of university students. Figure 1 presents the results of the structural equation model of TPB. As predicted by the TPB, intention (I) significantly determined exercise behavior (B), and attitude (A) and perceived

behavioral control (PBC) were significant predictors of exercise intention. However, no significant subjective norm (SN) effect on exercise intention was found, and perceived behavioral control did not significantly predict exercise behaviors. The structural equation modeling revealed adequate fit of the model to the data, providing .91 of CFI and .05 of RMSRA. Thus, the TPB would be a theoretical framework to predict the antecedents of exercise intentions and behaviors of Korean people.

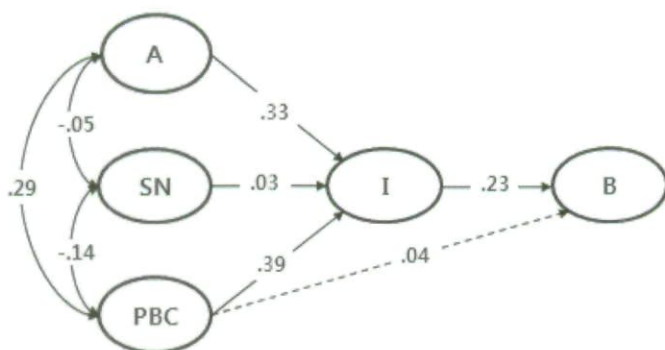


Figure 1. The Result of the TPB Structural Model (Yoo, 2006, p. 31). Note: A= attitude, SN= subjective norm, PBC= perceived behavioral control, I=exercise intention, B=exercise behavior.

The TPB could be directly applied to explain exercise intentions and behaviors in Korea. However, there are grounds to believe that it would not be as powerful in understanding the exercise behaviors in Confucian culture and that explanatory power would be improved by incorporating constructs relevant to Confucian culture. In this regard, Lee (1991) proposed the Confucian model replacing subjective norms with face-saving and group conformity to fit Confucian culture: Behavior ~ Intention = Attitude + Face-Saving + Group Conformity. That is, the subjective norms do not directly take into account two strong social pressures, face-saving and group conformity, which operate on the exercise behavior of Korean adults. Face saving was determined by a participant's response to the visibility or prestige for participating exercise, (e.g., "I may lose face if I am not involved in exercise"). Group conformity was determined by an individual's desire to follow social atmospheres for participating in physical activity (e.g., "I have to participate in exercise as others do"). It is assumed that Koreans may have a strong tendency to

be involved in exercise in order not to lose face, since social expectations to participate in exercise have considerably increased in Korea nowadays. Furthermore, many decisions of exercise participants may be made under heavy influence from the group with which they are interacting in the overall society.

Yoo (2006) examined the Confucian model replacing subject norms with the two cultural factors (face-saving and group conformity) in predicting exercise intentions and behaviors of 480 Korean college students. It was hypothesized that the Confucian model would be better in predicting exercise behaviors of the Korean college students than the TRA and TPB. The structural equation modeling revealed general support for the structural validity of all three models ($CFI > .90$, $RMSRA < .05$). The Confucian model demonstrated goodness of fit indices similar to the other two models. Thus, the result is equivocal to conclude that the Confucian model replacing subject norms with the two cultural factors would have more predictive power than others. Group conformity was a significant predictor of intention. However, face-saving had a relatively low contribution to determine exercise intention. Much remains to be learned about the cultural factors that could affect exercise intentions and behaviors of Korean people.

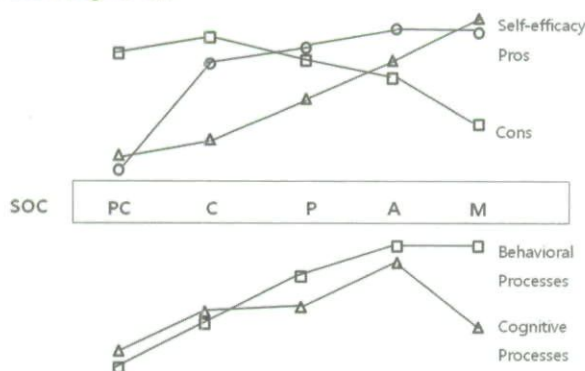
Transtheoretical Model

The TTM (Prochaska & DiClemente, 1983) describes health behavior adoption and maintenance as a process that occurs in discrete stages. The stages range from precontemplation (PC: not considering a change), contemplation (C: considering a change), preparation (P: making small changes), action (A: making changes to an appropriate level), to maintenance (M: sustaining the change over time). The TTM also includes five cognitive processes of change (consciousness raising: CR, dramatic relief: DR, environmental reevaluation: ER, self-reevaluation: SR, social liberation: SoL) and five behavioral processes of change (counter conditioning: CC, helping relationships: HR, reinforcement management: RM, self-liberation: SL, stimulus control: SC) that people use to progress through the stages of change (Table 1). In addition, self-efficacy and decisional balance are major constructs in the TTM in attempting to explain why health behavior change occurs. Self-efficacy is the situation-specific confidence to overcome a difficult situation in performing health behavior change. The decisional balance reflects the pros (benefit) and the cons (cost) of health behavior change.

Table 1. Definitions of the Processes of Change for Exercise (Biddle & Nigg, 2000, p. 301)

Cognitive Processes	Definition
CR	Seek new information about exercise
DR	Experience and express intense feelings/emotions about not exercising
ER	Assess how exercising affects physical and social environment
SR	Cognitive and emotional re-appraise values regarding inactivity
SoL	Develop awareness and acceptance of lifestyle including exercise
Behavioral Processes	Definition
CC	Substitute alternatives for sedentary behavior
HR	Use support from others to adopt continuous exercising
RM	Change contingencies; reward exercise
Sel	Choose and commit to exercise; believe that one can change
SC	Control situations and cues that stop exercise

A number of studies demonstrated that the processes of change (SOC), self-efficacy, and decisional balance (Pros and Cons) significantly influenced exercise behavior in terms of discriminating among the stages of change (See, Marshall & Biddle, 2001). More specifically, the cognitive processes are more important in the earlier stages, whereas the behavioral processes come into play in the later stages. Self-efficacy usually increases across the stages of exercise behavior change, and the pros increase while the cons decrease across the stages. Biddle and Nigg (2000) hypothetically summarized the results of TT studies conducted in Western countries (Figure 2).

*Figure 2. Stage of Change and the Transtheoretical Model (Biddle & Nigg, 2000, p. 301).*

Note: SOC= stage of change, PC= precontemplation, P=preparation, A= action, M= maintenance

Recently, a series of studies were conducted to test applicability of the TTM among various Korean populations. Kim (2004) investigated changes of self-efficacy and decisional balance through five stages of exercise behaviors among 750 secondary students. The results of this study exhibited significant increases in exercise self-efficacy from the precontemplation to the maintenance stages. Furthermore, the students in the action and maintenance stages showed significantly higher levels of perceived exercise benefits (Pros) than those in the precontemplation stage. Perceived exercise barriers (Cons) generally decreased with advancing the stages of exercise behavior.

The follow-up studies were conducted to examine the association of the process of change with the stage of exercise behavior among Korean students and adults (Kim, 2007; Kim, Cardinal, & Lee, 2006). The combined set of behavioral processes of change (where information is gathered through the environment and actions) emerged as the most important variable in terms of explaining adults' exercise behaviors. Each of the behavioral processes improved in linear sequence from precontemplation to maintenance stage, and the stimulus control (substitution of alternative behaviors for sedentary behavior) along with the counterconditioning (control situations and cues that stop exercise) were the most important predictors of the stage of exercise behavior in both univariate and multivariate analyses. In addition, the cognitive processes (where information is gathered through experience) increased sequentially from precontemplation to maintenance. Similar results were found in the studies using older Korean adults. The processes of cognitive and behavioral changes were significantly different among older adults across the stages of changes in exercise settings (Choi, 2007). The TTM constructs classified group membership with 79% of accuracy across the stages of change (Chun et al., 2000).

Basically, the TTM incorporates self-efficacy, decisional balance, and processes of change to predict the stages of behavioral change. Kim and her colleagues (2000) investigated causal relationships among the TTM constructs for exercise behaviors of Korean older adults. The results of modified fit indices of the hypothetical casual model demonstrated adequate causal relationships among self-efficacy, decisional balance, processes of change, and stages of change. The self-efficacy and several processes of changes (helping relationship, counter conditioning, cognitive determination) were the TTM construct significantly predicting the stages of change for exercise in older Korean adults. Overall, the TTM studies conducted in Korea

are in general agreement with the previous findings reported by Western countries. The TTM is appealing because it provides appropriate cognitive and behavioral strategies on how to intervene in each exercise stage (Lee & Jang, 2001). The behavioral and cognitive processes of change, self-efficacy, and decisional balance were important variables of the stage of change for exercise behavior.

An Integrating framework of the TPB and TTM

Recently, several researchers in Western countries attempt to understand exercise behavior change in integrating the constructs of the TPB and TTM (Courneya & Bobick, 2000; Kosma et al., 2007). For example, Courneya and Bobick (2000) investigated whether the relationship between the processes of change and the stages of change would be mediated by the TPB constructs (attitude, social norm, perceived behavior control). The results revealed that the TPB constructs mediated eight of the 10 relationships between processes of change and stages of change. Attitude was predicted by both cognitive and behavioral processes of change, whereas perceived behavioral control was predicted only by behavioral process. In addition, the TPB constructs and two of TTM constructs (counterconditioning and environmental reevaluation) were important in explaining overall stage differences of exercise behaviors.

In fact, the constructs of the TPB and TTM share many conceptual similarities in terms of explaining exercise behavioral change. Although some arguments exist in literature (Armitage & Conner, 1999), it seems that Korean people hardly differentiate the perceived behavioral control and self-efficacy that are all conceptualized as control beliefs on behavioral change. (Ajzen, 1991). Attitude (outcome expectancy) from the TPB includes all the individual beliefs of decisional balance (pros and cons of exercise) (Courneya & Bobick, 2000; Kosma et al., 2007). The stage of change which is a major construct in the TTM reflects both intention and behavior in the TPB. Thus, self-efficacy and attitude would be integrated or replaced with perceived behavioral control (TPB) and decisional balance (TTM), respectively, in order to make a more parsimonious theoretical framework to predict exercise intentions and behavioral changes. The conceptually different constructs are the subjective norm and processes of change in the two theoretical models. The TPB includes social influence which is neglected by the TTM, while the TTM emphasized the cognitive and behavioral strategies that people

use to progress exercise behaviors. (Courneya & Bobick, 2000).

Based on the theoretical frameworks of the TPB and TTM and the literature review, Yoo (2005, 2007) proposed an integrative model of exercise behavior applicable for Korean people (Figure 1). This model postulates that individuals' exercise behaviors continuously progress along with intention stage (I), action stage (A: short-term exercise), and maintenance stage (M: long-term exercise) in reciprocally interacting with cognitive (CP1 and CP2) and behavioral processes (BP1 and BP2) of change over times (T1 and T2). Attitude (AT) and group conformity (GC)¹⁾ are assumed as being important to promote exercise intention, whereas perceived self-efficacy (SE) promotes intention formation and behavior implementation (i.e., action). As is predicted by the TPB, exercise intention is hypothesized to be the direct determinant of short-term exercise (i.e., action) which is regarded as a direct predictor of long-term exercise (i.e., maintenance).

The integrative model of exercise behavior has been preliminary validated among 533 older adults (171 males and 332 females) in Korea (Yoo, 2008, in press). After assessing social-cognitive variables and intentions (T1), exercise behaviors and processes of change were measured on two occasions: 3 months later (T2) and 6 months later (T3). The structural equation modeling revealed adequate fit of the hypothetical model of exercise behavior. All hypothesized paths indicating causal relationships among constructs in the model were significant (Figure 3). However, it was found that attitude (AT) did not strongly predict intention (I), and self-efficacy (SE) predicted action (A) less strongly than intention. Intention and action stages of exercise strongly predicted cognitive-behavior processes (See, Figure 3: I→CP1, BP1, A→CP2, BP2). However, the predictive powers of cognitive-behavior processes on action and maintenance stages (M) were not strong (See, Figure 3: CP1/CP1→A, CP2/BP2→M). Furthermore, there were significant gender differences in predictive powers of structural variables in the model (Table 1). Males were more likely to use cognitive processes (See, Table 1: CP1→A, CP2→M), while females tended to use behavioral processes over exercise stages (See, Table 1: BP1→A, BP2→M). These results offer a clearer understanding of the dynamics of exercise intention and behavior, involving various social-cognitive constructs and processes. The proposed integrative model of exercise behavior may be useful to develop more sophisticated interventions and health promotion programs

1) Group conformity replacing subjective norm of the TPB would be an important determinant of exercise behavior in collective society (i.e., Korea).

for Korean people. However, more work should be conducted regarding the generalizability and usefulness of the integrative model.

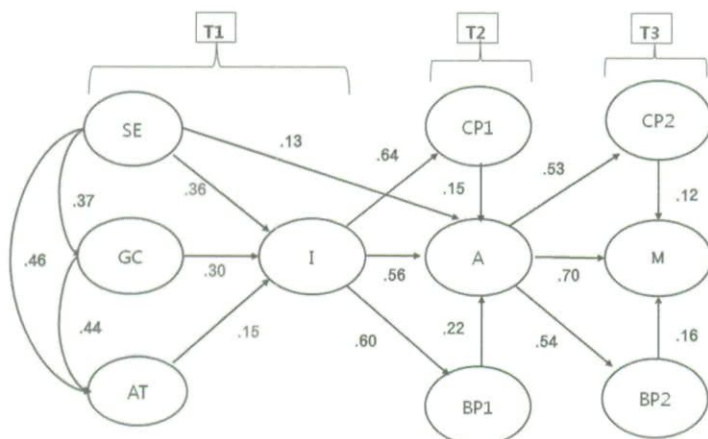


Figure 3. The Result of the Integrative Model of Exercise Behavior (Yoo, 2008, in press).

Note: T1=time 1, T2=time2, T3=time3, SE= self-efficacy, GC= group conformity, AT=attitude, I= intention, A=action, M=maintenance, CP1= cognitive process(T1), BP1=behavioral process(T1), CP2=cognitive process(T2), BP2=behavioral process(T2).

Table 2. Standardized Parameter Estimates among Latent factors for Male and Female.

path	Male (n=171)	Female (n=332)	Δp
SE $\rightarrow$ I	.49**	.22**	P<.01
GC $\rightarrow$ I	.32**	.35**	ns
AT $\rightarrow$ I	.17*	.17**	ns
SE $\rightarrow$ A	.13*	.14*	ns
I $\rightarrow$ A	.49**	.62**	P<.01
I $\rightarrow$ CP1	.72**	.56**	P<.01
I $\rightarrow$ BP1	.64**	.56**	P<.05
A $\rightarrow$ M	.71**	.70**	ns
CP1 $\rightarrow$ A	.25**	.06	P<.01
BP1 $\rightarrow$ A	.10	.32**	P<.01
A $\rightarrow$ CP2	.63**	.43**	P<.01
A $\rightarrow$ BP2	.54**	.53**	ns
CP2 $\rightarrow$ M	.20*	.04	P<.01
BP2 $\rightarrow$ M	.08	.22*	P<.01

Notes: SE= self-efficacy, GC= group conformity, AT=attitude, I= intention, A=action, M=maintenance, CP1= cognitive process(T1), BP1=behavioral process(T1), CP2=cognitive process(T2), BP2=behavioral process(T2)

Concluding Remarks

The theoretical frameworks (i. e., TPB and TTM) can help exercise practitioners understand the key elements associated with exercise behaviors. These also can help them evaluate changes in behavior that occur as a result of a planned intervention. However, it should be recognized that the improvement in science and practice is necessary to develop and validate the theoretical frameworks with regard to generalizability in changing exercise behavior.

Although the evidence was less extensive, the results of studies conducted in Korea to test the TPB and TTM appear to be consistent with those in the other countries, (e.g., U.S.). The TPB and TTM could be applied to predict and explain exercise behaviors of Korean people. The proposed model of exercise behavior integrating the TPB and TTM constructs preliminarily proved its validation and utilization. However, more work remains to conceptually and empirically validate this integrative causal model with regard to the dynamic process of exercise behavior across situation and time.

Recently, exercise researchers in East (Yoo, 2006) and West (Hagger et al., 2007) have begun to recognize that the cultural values are an important moderator among the theoretical constructs predicting exercise behaviors. The cultural value would be social values, norms, expectations, and belief systems. Ignoring the possible effects of the cultural value could deprive our science of potential explanatory variables. Korea is a country that has maintained Confucian values. Several major differences exist between Confucian cultures and the Judeo-Christian cultures that dominate Western countries. There is a need for future research of similarities and differences in the relationship between exercise behaviors and sociocultural variables across Korean and Western sample. (Yoo, 2006). This cross-cultural research may facilitate the possibility of universal application of the social-cognitive theory in exercise and physical activity.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.

- Armitage, C. J., & Conner, M. (1999). Distinguishing perceptions of control from self-efficacy: Prediction consumption of a low-fat diet using the theory of planned behavior. *Journal of Applied Social Psychology*, **29**, 72-90.
- Biddle, S. J. H., & Nigg, C. R. (2000). Theories of exercise behavior. *International Journal of Sport Psychology*, **31**, 290-304.
- Buckworth, J., & Dishman, R. K. (2001). *Exercise psychology*. Champaign, IL: Human Kinetics.
- Choi, S. B. (2007). Process of change, decision balance, self-efficacy corresponding to stages of change in exercise behaviors on older adults. *Journal of Sport and Leisure Studies*, **29**, 661-672.
- Chun, Y. J., Kim, S. I., Lee, S. J., Kim, S. Y., Lee, S. J., Park, E. S., & Chang, S. O. (2000). Process of change corresponding to the stage of change of exercise in elderly. *Korean Journal of Nursing Study*, **30**, 354-365.
- Courneya, K. S., & Bobick, T. (2000). Integrating the theory of planned behavior with the processes and stages of change in the exercise domain. *Psychology of Sport and Exercise*, **1**, 41-56.
- Culos-Reed, S. N., Gyurcsik, N. C., & Brawley, L. R. (2001). Using theories of motivate behavior to understand physical activity: Perspectives on their influence. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (2nd Eds.), *Handbook of research on sport psychology* (pp. 695-717). New York: Macmillan.
- Dishman, R. K. (1988). Exercise adherence research: Future directions. *American Journal of Health Promotion*, **3**, 52-56.
- Downs, D. S., & Hausenblas, H. A. (2005). The theories of reasoned action and planned behavior applied to exercise: A meta-analytic update. *Journal of Physical Activity and Health*, **2**, 76-97.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Hagger, M. S., Chatzisarantis, N. L. D., Barkoukis, V., Wang, J. C. K., Hein, V., Pihu, M., Soos, I., & Karsai, I. (2007). Cross-cultural generalizability of the theory of planned behavior among young people I a physical activity context. *Journal of Sport & Exercise Psychology*, **29**, 1-29.
- Kim, S. Y., Kim, S. I., Chun, Y. J., Lee, P. S., Lee, S. J., Park, E. S., & Chang, S. O. (2000). A prediction model for stage of change of exercise in the Korean elderly. *Korean Journal of Nursing Study*, **30**, 366-379.
- Kim, Y. H. (2004). Korean adolescents' exercise behavior and Its relationship with psychological variables based on stage of change model. *Journal of Adolescent Health*, **34**, 523-530.
- Kim, Y. H. (2007). Application of the transtheoretical model to identify psychological constructs influencing exercise behavior: A questionnaire survey. *International Journal of Nursing Studies*, **44**, 936-944.
- Kim, Y. H., Cardinal, B. J., & Lee, J. Y. (2006). Understanding exercise behavior among Korean

- adults: A test of the transtheoretical model. *International Journal of Behavioral Medicine*, **13**(4), 295-303.
- Kosma, M., Ellis, R., Cardinal, B. J., Bauer, J. J., & McCubbin, J. A. (2007). The mediating role of intention and stages of change in physical activity among adults with physical disabilities: An integrative framework. *Journal of Sport & Exercise Psychology*, **29**, 21-38.
- Landers, D. M., & Arent, S. M. (2001). Physical activity and mental health. In R. N. Singer, H. A. Hausenblas, C. M. Janelle (Eds), *Handbook of sport psychology* (pp.740-765). New York: John Wiley & Sons, Inc.
- Lee, P. S., & Jang, S. O. (2001). The effect of intervention program based on stages of behavioral changes of older adults in exercise settings. *Korean Journal of Nursing Study*, **31**, 818-835.
- Lee, C. (1991). Modifying an American consumer behavior model for consumers in Confucian culture: The case of Fishbein behavioral intention model. *Journal of International Consumer Marketing*, **3**(1), 27-50.
- Lippke, S., Ziegelmann, J. P., & Schwarzer, R. (2005). Stage-specific adoption and maintenance of physical activity: Testing a three-stage model. *Psychology of Sport and Exercise*, **10**(4), 1-19.
- Marshall, S. J., & Biddle, S. J. H. (2001). The transtheoretical model of behavior change: A meta-analysis of application to physical activity and exercise. *Annals of Behavioral Medicine*, **23**, 229-291.
- Prochaska, J. O., & DiClemente, C. C. (1983). Stage and processes of self change of smoking: Toward and integrative model. *Journal of Consulting and Clinical Psychology*, **51**, 390-395.
- Yoo, J. (2005). *Development of action process model for exercise behavior: A proposal*. Proceedings in the KASPERD International Sport Science Congress, Chuncheon, Korea.
- Yoo, J. (2006). A comparison of theoretical models prediction exercise intention and behavior. *International Journal of Applied Sports Sciences*, **18**(1), 22-38.
- Yoo, J. (2007). *Investigating theoretical models of exercise behaviors in Korea*. Proceedings in 5th Bangkok ASPASP International Congress on Sport Psychology (pp.97-105) Bangkok, Thailand (Dec. 1- 4).
- Yoo, J. (2008). *Analyses of the integrated action process model of exercise for older adults*. Manuscript for publication in the Korean Journal of Sport Psychology.
- Yoo, J., & Kim, Y. J. (1999). Analyses of psychological determinants affecting intention for participating leisure activities among college students. *Korean Journal of Physical Education*, **38**(4), 919-927.
- Yoo, J., & Kim, Y. J. (2002). Analyses of leisure behavioral theories. *Korean Journal of Sport Psychology*, **13**(3), 171-178. 

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