

**RELATIONSHIP OF SELF-EFFICACY AND DECISIONAL BALANCE WITH EXERCISE STAGES OF CHANGE IN KOREAN COLLEGE STUDENTS****YoungHo Kim<sup>\*1</sup> SooJin Kang<sup>2</sup>**<sup>\*1</sup>Professor, Department of Sport Science, Seoul National University of Science and Technology, Korea.<sup>2</sup>Lecturer, Department of Sport Science, Seoul National University of Science and Technology, Korea.

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**KEYWORDS:** Self-efficacy, Exercise benefit and barrier, Stage of change, Transtheoretical model.

**ABSTRACT**

The current study examines the exercise behavior of Korean college students and reveals the differences in self-efficacy and decision balance by the stages of exercise behavior. A total of 459 college students randomly selected from Seoul National University of Science and technology were surveyed. Three Korean-version questionnaires were used to identify the stage of exercise behavior and psychological attributes of adolescents: Stage of Exercise Behavior Change Questionnaire, Decision Balance Scale for Exercise, and Exercise Self-efficacy Scale. Data were analyzed by frequency analysis,  $\chi^2$  test, and MANOVA. The exercise pattern of Korean adolescents was different by each stage of exercise behavior. In addition, exercise efficacy, exercise benefits and exercise barriers differentiated across the stages of exercise behavior. This study provides information about relatively unstudied Korean college students and has the potential to influence the development of better exercise interventions and health promotion programs for youth.

**INTRODUCTION**

The transtheoretical model (TTM) describes intentional health behavior adoption and maintenance as a process that occurs over time as a function of behavioral history and motivation. The TTM accounts for the dynamic nature of health behavior change and recognizes that individuals often must make several attempts at behavior change before they are successful<sup>1)</sup>. The TTM consists of five stages of exercise behavior change: (1) Precontemplation (individuals are physically inactive and do not intend to initiate exercise within the next 6 months), (2) Contemplation (individuals are physically inactive and intend to begin regular exercise within the next 6 months), (3) Preparation (individuals are irregularly active below a criterion level-three or more times per week for at least 30 min. each time), (4) Action (individuals have been regularly active for less than 6 months), and (5) Maintenance (individuals have sustained regular exercise for more than 6 months after initial exercise<sup>2)</sup>.

Several psychological variables have been associated with exercise participation and can be imbedded with the SCM for exercise: decision balance (perceived benefits of exercise, perceived barriers to exercise) and self-efficacy. The decision balance construct is based on the conflict model of decision making<sup>3)</sup>, and focuses on the importance of perceived positive (pros) and negative (cons) outcomes of a behavior change. It is assumed that an individual will not change his/her behavior unless he/she perceives the positives of change to outweigh the negatives. For exercise, examples of “pros” include health benefits (e.g., stress relief, improved sleep patterns and increased energy and stamina). Time constraints competing commitments and/or task (e.g., less time to spend with family and friends), and inclement weather are examples of “cons”<sup>4)</sup>. Self-efficacy is one's perceived confidence in the ability to carry out a specific behavior successfully. An individual's efficacy is situation-specific and may vary in relation to personal circumstances (i.e., sickness, change in schedule)<sup>5)</sup>. According to the perspective of SCM, it is hypothesized that individuals in the different stages of exercise behavior have different perceived self-efficacy regarding benefits for exercise and barriers to exercise, and thus have different levels of confidence in their ability to maintain exercise benefits and to overcome exercise barriers<sup>6)</sup>.

The purpose of the present study was to examine characteristics associated with the different stages of exercise behavior change among a random sample of college students in Korea. Specifically, the main objectives of the study were to determine the proportion of Korean college students in each of the five exercise stages and the differences in self-efficacy and decision balance by the stages of exercise behavior.



## METHODS

### Participants

A total of 459 college students (male: 240, female: 219; Mage = 23.7 years) from Seoul National University of Science and Technology were voluntarily participated in this study.

### Measures

For the exercise behavior of adolescents, Stage of Exercise Behavior Change Questionnaire, developed by Marcus et al.<sup>2)</sup> was translated into Korean, and used in the study. In this questionnaire, stage of exercise behavior change was assessed using 5-item, dichotomous scale ("yes"/"no") related to regular exercise behavior and intentions. In this questionnaire individuals were categorized into one of five stages of exercise behavior change described previously. In addition, test-retest reliability measures were conducted as a measure of instrument stability, and obtained a reliability of .85. To assess adolescents' confidence, beliefs, and intention relating to exercise behavior change, two revised questionnaires were used in this study. Decision Balance Scale for Exercise, developed by Marcus and Owen<sup>7)</sup> was revised for the Korean version, and adopted in the study. In this revised questionnaire with 10 items, subjects were asked to indicate, on a 5-point Likert-type scale (ranging from 1, "not at all important" to 5, "extremely important"), how important each statement was in regard to their decision to exercise or not. In addition, test-retest reliability measures were performed as a measure of instrument stability, and obtained a reliability of .89 for exercise benefits factor and .88 for exercise barriers factor. Exercise Self-efficacy Scale, developed by Bandura<sup>5)</sup> was revised for the Korean version<sup>8)</sup>, and used in this study. The revised exercise self-efficacy scale consisted of 18 items with a 5-point scale ranging from 1 (cannot do) to 5 (certain can do). In addition, test-retest reliability was .86.

### Results

#### Exercise behavior for college students

Table 1 shows the result of the frequency analysis concerning the exercise behavior distribution in the adolescents. The following stages of exercise behavior emerged: precontemplation (n=117, 17.5%), contemplation (n=112, 16.6%), preparation (n=137, 20.4%), action (n=189, 28.3%), and maintenance (n=116, 17.2%). Overall 54.5% of the sample reported being inactive (precontemplation or contemplation) or exercise irregularly (preparation).

**Table 1. Stages of Exercise behavior Distribution**

Stages of exercise behavior	Cases(n)	(%)
Precontemplation	117	17.5
Contemplation	112	16.6
Preparation	137	20.4
Action	189	28.3
Maintenance	116	17.2
Total	671	100.0

#### Differences in self-efficacy and decision balance by the stages of exercise behavior

Table 2 illustrates the results of MANOVA to identify the differences in self-efficacy and decision balance of the college students by the stages of exercise behavior. Overall, self-efficacy differentiated individuals at different stages of exercise behavior [ $F(4, 657)=10.49, p<.001$ ]. Tukey's post hoc tests revealed significant increases in exercise self-efficacy from the precontemplation to the maintenance stages. In addition, Table 2 shows that significant differences in both exercise benefits [ $F(4, 657)=4.99, p<.01$ ] and exercise barriers [ $F(4, 657)=2.68, p<.05$ ] emerged across stages of exercise behavior. Individuals in the precontemplation stage had significantly lower perceived benefits associated with exercise in comparison with those in the action and maintenance stage. Perceived exercise barriers generally decreased with advancing the stages of exercise behavior.

**Table 2. Means and Standard Deviations on Self-efficacy and Decision Balance in Relation to Exercise Behavior**

Variables	Stages of Exercise Behavior						Pairwise comparison <sup>1</sup>
	PC	C	P	A	M	F	



Self-efficacy	28.78 (12.51)	31.63 (10.32)	37.46 (11.90)	49.72 (15.36)	52.73 (13.57)	10.49***	PC, C, P<M; PC, C<A
Exercise benefits	3.13 (1.03)	3.24 (.94)	3.36 (.75)	3.50 (.58)	3.62 (.74)	4.99**	PC, C<M; PC<A
Exercise barriers	2.62 (.79)	2.54 (.80)	2.40 (.83)	2.36 (.70)	2.34 (.81)	2.68*	M, A<PC

\*P<.05; \*\*P<.01; \*\*\*P<.001.

<sup>1</sup>Mean differences for the Tukey HSD pairwise comparisons.

PC=Precontemplation; C=Contemplation; P=Preparation; A=Action; M=Maintenance.

Standard deviations are in parentheses.

## DISCUSSION

The present study indicated that exercise self-efficacy and exercise benefits scores were lower during the “precontemplation” and “contemplation” stages compared to the “action” and “maintenance” stages, and that exercise barriers scores were higher during the “precontemplation” and “contemplation” stages compared to the “action” and “maintenance” stages. This finding for self-efficacy and exercise benefits supports earlier studies in different cultures that these constructs increase as people move from an inactive to an active lifestyle. This similar result provides strong support for the utility of the SCM as a model for describing exercise behavior change. However, such a comparison should be interpreted with caution, since different staging measures were used, and because different population groups were studied<sup>9</sup>). Nevertheless, the findings obtained from this study further imply that health education aimed at physical activity should be stage-matched.

The present data regarding exercise self-efficacy can be explained in that individuals with a high level of confidence to engage in physical activity, despite obstacles, can be seen as having high self-efficacy for exercise. They can be expected to feel much more readiness for exercise, and to actually engage in a greater amount of physical activity, than individuals with low self-efficacy. This interpretation is consistent with Bandura's theory which hypothesizes that an individual's level of confidence to engage in a specific behavior is significantly related to actual behavior<sup>10</sup>.

In addition, the pattern of relationships between exercise behavior and decision balance found in the present study is supported by that of Janis and Mann, emphasizing that the importance of perceiving high benefits and low barriers before behavior change can occur<sup>3</sup>). Therefore, it is possible to explain that individuals' perceptions that exercise would make them feel healthier and better were positively related to greater readiness for exercise. Conversely, individuals' beliefs that they would feel sore and have little time for exercise were negatively associated with readiness for exercise. In this regard, this study argues that emphasizing the personal benefits of exercise may be beneficial for facilitating exercise adoption and suggest strategies that promote participation in a variety of activities to prevent boredom, a continued sense of mastery and competence, continued enjoyment, and injury avoidance, may be needed to promote continued exercise adherence.

This study provides some insights into the physical activity habits and the psychological constructs of increasing physical activity levels. Furthermore, the present study provides starting points for interventions aimed at increasing physical activity levels, and a baseline level from which to evaluate these interventions.

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