

© *Journal of International Students*  
Volume 10, Issue 3 (2020), pp. 688-702  
ISSN: 2162-3104 (Print), 2166-3750 (Online)  
Doi: 10.32674/jis.v10i3.763  
ojed.org/jis

## **Exercise Motivations: Differentiation of International and Domestic College Students**

Dongwook Cho  
*Alcorn State University, USA*

Steve Beck  
*Oklahoma State University, USA*

Sung Kyeom Kim  
*Dongseo University, South Korea*

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### **ABSTRACT**

As the number of international and domestic college students has increased, the importance of developing healthy lifestyles has been getting significant attention from college administrators. The current study was designed to determine if differences occur in exercise motivation between international and domestic college students. A total of 155 college students from a southwestern U.S. university completed the Exercise Motivations Inventory–2 through the university’s online active research system. Analyses indicated that international students possessed a higher motivation to exercise for revitalization, while domestic students were more motivated for a challenge, competition, and social recognition. The findings suggest that campus health professionals or wellness administrators may need to utilize different strategies to promote the health of international college students through exercise programs.

**Keywords:** domestic college students, EMI-2, exercise, healthy lifestyle, international college students, motivations

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College students have been the target audience for many research efforts aimed at understanding the motivation to exercise (Egli et al., 2011; Furia et al., 2009; Ryan,

et al., 1997), as well as research on differences in exercise motivation between genders (Kilpatrick et al., 2005). However, few studies have compared the differences in exercise participation or constraints between international and domestic college students, and no studies have compared differences in exercise motivation between these two groups. Due to the increasing international student population and the services that universities provide to support student health, it is important to understand the differences in exercise motivations between international and domestic students.

The importance of developing a healthy lifestyle through extracurricular activities has received significant attention from both college students and college personnel. Colleges and universities provide various student resources to enhance healthy lifestyles. Examples of these resources include intramural sport programs, club sports, wellness and outdoor programs, and health education campaigns (Cho & Price, 2016; Mowbray et al., 2006).

It is important to note that participation in exercise programs provides college students many benefits. There are numerous documented studies indicating that exercise has psychological and physiological benefits for college students, including lower perceived stress (Vankim & Nelson, 2013), improved dispositional mindfulness (Murphy et al., 2012), higher self-esteem, happiness and positive body image (Rivers & Dilger, 2015), and lower compulsion, depression, anxiety, and hostility (Yang, 2015).

However, the American College Health Association (2014) indicated that 22.3% of college students did not participate in at least 30 minutes of moderate-intensity cardio or aerobic exercise per day, and 36.9% of them did not perform at least 20 minutes of vigorous and aerobic exercise within the past 7 days. More specifically, approximately 70% of international students in the United States only participated in physical activity once or less per month (Cho & Beck, 2016). College students have had the most rapid increase in the prevalence of overweight and obesity (Mokdad et al., 2003), with 32.3% of female and 40.6% of male students categorized as overweight and obese (American College Health Association, 2014).

Even with the wealth of evidence connecting regular exercise to physical and psychological health, many people do not exercise enough to reap the positive benefits (Buckworth et al., 2007; Dubbert, 1992). The lack of exercise participation and persistence has led many researchers to focus on the participants' motivation to engage in exercise (Ingledeew & Markland, 2008; Markland & Hardy, 1993; Teixeira et al., 2012). To be motivated means to be moved to do something and involves the direction, intensity, and persistence of the behavior (Buckworth et al., 2007; Ryan & Deci, 2000a; Ryan & Deci, 2000b). There are numerous reasons people are innately moved to exercise—for example, improving personal health or skills (Vallerand & Losier, 1999). However, other people exercise because they are seeking some external rewards such as weight loss or improved appearance (Markland & Ingledeew, 1997). These two different types of motivation are what Ryan and Deci (2000) referred to as intrinsic and extrinsic motivation. Intrinsic motivation is innate and involves participation in an activity to experience the pleasure that is inherent in the activity (Vallerand, 1997). Extrinsic motivation is participation in order to gain some type of reward or to avoid a punishment (Ryan & Deci, 2000a). Research has shown

that intrinsic motivation and autonomous regulation are associated with enjoyment and sustained physical activity (Gardner & Lally, 2013; Ryan et al., 1997). However, the motivation to exercise does not always easily fit into the dichotomy of intrinsic and extrinsic reasons.

Ryan and Deci's (2000a) self-determination theory (SDT) explains this multidimensional view of a participant's motivation as lying along a continuum of autonomy ranging from external regulation to autonomy or true intrinsic motivation. On one extreme is intrinsic motivation, which is completely autonomous, and participation is done for the inherent satisfaction it provides. Within the SDT continuum, extrinsic motivation is broken into four classifications moving from external regulation to introjected regulation to identified regulation then to the most autonomous type, integrated motivation.

According to SDT, people may begin participating in an activity for very extrinsic (regulated) reasons but may internalize these regulations and begin to experience greater autonomy (Ryan & Deci, 2000b). For example, some students may begin to exercise because they want to avoid health-related problems. As these students begin to see positive outcomes, they may further internalize the value of exercise and begin to exhibit greater persistence and better quality of engagement (Chatzisarantis et al., 1997; Tapps et al., 2013).

Most colleges provide campus recreational activities, wellness programs, and campus health campaigns (Seo et al., 2011; Sturts & Ross, 2013). However, many international students are challenged by various constraints to enjoy these collegiate benefits because of social relationships, cultural barriers, and educational pressures (Glass et al., 2014; Shifman et al., 2012; Walker et al., 2007). Previous research, for instance, has indicated that international students have significantly higher intrapersonal and structural constraints that prevent them from participating in campus recreational intramural sports programs (Cho & Price, 2018). With such constraints, international college students face barriers to engagement in physical activities, exercise, or recreational sports programs provided by the university.

The Exercise Motivation Inventory-2 (EMI-2) is a widely accepted instrument used to measure different types of motivation to exercise (Egli et al., 2011). The EMI-2 comprises 14 factors covering a variety of motivations including challenge, competition, revitalization, and social recognition (Markland & Ingledew, 1997). There has been various research conducted on different types of exercise motivation using the EMI-2 (Cho, & Beck, 2016; Egli et al., 2011; Quindry et al., 2011). For instance, Cho and Beck (2016) examined the different motivations to participate in physical activities among international college students using the EMI-2. The results indicated that students who participated in competitive physical activity had higher motivation of affiliation, challenge, and competition than nonparticipants. Another study by Quindry and colleagues (2011) examined exercise motivation from adolescence throughout adulthood by grouping age and sex. The results indicated interpersonal motivation was positively associated with engagement in exercise among the young adults' group (20–34 years), which would be the target population of this current study.

Several studies have used the EMI-2 to determine exercise motivation differences between females and males (Kilpatrick et al., 2005; Louw et al., 2012;

Meyer & Bevan-Dye, 2014; Quindry et al., 2011). Previous research has determined that male students had statistically higher exercise motivations for challenge, competition, social recognition and strength/endurance (Kilpatrick et al., 2005), while female students had a significantly higher level of motivation for weight management (Kilpatrick et al., 2005; Louw et al., 2012). Another study indicated that females were more motivated for weight management for exercise, while males were more engaged in exercise because of competition (Quindry et al., 2011). Meyer and Bevan-Dye (2014) investigated the gender difference among students age 18 to 24 and found female students were more motivated for health-related, weight management, and appearance reasons, while male students were more motivated by enjoyment, challenge, competition, and strength.

As such, there are numerous studies aimed at understanding exercise motivations of individuals. However, there has been limited published research designed to determine differences in exercise motivation between international and domestic students. There have been even fewer studies to compare the differences between international and domestic male or female students. The purpose of the current study was to determine if differences occur in exercise motivation between international and domestic college students. The hypotheses tested in this study were as follows:

H1: There will be significant differences between international and domestic students in their exercise motivations.

H2: There will be significant differences between male international and domestic students in their exercise motivations.

H3: There will be significant differences between female international and domestic students in their exercise motivations.

H4: There will be differences between international and domestic students in their preference of exercise motivations.

## **METHOD**

### **Participants**

Participants included students from a regional, public 4-year university located in the southwestern United States. A total of 180 college students completed the survey, but only 155 of the surveys were useable (71 males and 84 females). Twenty-five surveys were excluded due to missing or incomplete answers. Among these useable surveys, 45 participants were international students (23 males and 22 females) and 110 were domestic students (48 males and 62 females). The survey required all participants to acknowledge that their participation was voluntary with no known risks. All students were informed of the anonymity of the study and proper approval was obtained from the university's Institutional Review Board.

## **Site Selection**

The university where the study was conducted had approximately 26,000 undergraduate and graduate students that included more than 1,580 international students from 84 countries during the 2018–2019 school year. Approximately 80% of international students were from Asian countries, with Chinese international students being the highest portion (19.6%), followed by India (19.1%) and Saudi Arabia (14.0%). The university provides campus recreation programs such as an intramural sport program, club sports, and outdoor programs. The university also has a Department of Wellness to enhance students' wellness for the mind and provides health risk assessments, massage therapy, personal training, and nutrition counseling.

## **Procedures**

We used convenience sampling to collect the surveys. We recruited students to participate through the university's online active research system, which allows researchers to post studies and students to sign up for participation in these studies. While some university instructors incentivize the active research system by offering course credit or extra credit for students' participation in the system, this study did not provide any additional incentives. Data was collected throughout the semester and was available to both international and domestic students. However, international students did not participate during this recruitment period. Due to the lack of international students' participation, international students the International Student Affairs administrator contacted international students and emailed them a link to the survey along with a brief description of the study. However, only 45 usable surveys were collected from international students.

## **Instrument**

The Exercise Motivations Inventory–2 (EMI-2), developed by Markland and Ingledew (1997), was used to survey students' exercise motivations. The EMI-2 consists of 51 items and each item is measured using a 6-point Likert-scale ranging from 0 (*Not at all true for me*) to 5 (*Very true for me*). These items form 14 subscales including affiliation, appearance, challenge, competition, enjoyment, health pressures, ill-health avoidance, nimbleness, positive health, revitalization, social recognition, strength and endurance, stress management, and weight management. Each subscale score is determined by calculating the mean of three to four appropriate items based on the scoring key by creators of the EMI-2 (Ingledew et al., 1998; Markland & Ingledew, 1997). Reliability of 51 EMI-2 items in this study was confirmed by the Cronbach's alpha coefficient measurement ( $\alpha = .911$ ), as well as 14 subscales in the Table 1.

**Table 1: Exercise Motivation Inventory-2 (EMI-2) Subscales, Sample Items, and Cronbach's Alpha Coefficients**

Subscale	Sample item	No. of items	$\alpha$
Affiliation	To spend time with friends	4	.889
Appearance	To have a good body	4	.814
Challenge	To give me goals to work towards	4	.860
Competition	Because I like trying to win in physical activities	4	.943
Enjoyment	Because I feel at my best when exercising	4	.914
Health pressures	Because my doctor advised me to exercise	3	.737
Ill-health avoidance	To prevent health problems	3	.749
Nimbleness	To maintain flexibility	3	.873
Positive health	Because I want to maintain good health	3	.833
Revitalization	To recharge my batteries	3	.737
Social recognition	To show my worth to others	4	.863
Strength and endurance	To develop my muscles	4	.879
Stress management	To give me space to think	4	.906
Weight management	To stay slim	4	.819

### **Data Analysis**

The Statistical Package for the Social Science 21 ([SPSS]; IBM Corp., 2012) for Windows was used to analyze data reliability, demographics of the participants, and the EMI-2. The mean scores of the 14 subscales were used as the dependent variables and demographics of participants (international vs. domestic, male international vs. male domestic, female international vs. female domestic) were used as the independent variables. Due to convenience sampling and small sample size, this study used the Mann-Whitney *U* nonparametric test. The Mann-Whitney *U* test allows for the comparison of the groups without providing the assumption that values are normally distributed. To control for the inflation of type I error rate, alpha was adjusted using a Bonferonni correction. The traditional level of significance (.05) was divided by the number of comparisons (14), which resulted in an adjusted  $\alpha \leq .003$ .

## **RESULTS**

### **Mean Difference on Exercise Motivation Between International and Domestic Students**

In this study, we compared international and domestic students' scores on the 14 subscales of exercise motivation (EMI-2). The results of the current study revealed that international students possessed a significantly higher ( $\leq .003$ ) motivation to

exercise for revitalization than domestic students. However, domestic students in this sample had statistically significant higher ( $\leq .003$ ) motivation scores than international students for challenge, competition, and social recognition (Table 2).

**Table 2: Mann-Whitney *U* Test Results for Mean Difference and Ranking on Exercise Motivation Between International and Domestic Students**

Subscale	International			Domestic			<i>U</i> scores	<i>p</i>
	<i>M</i>	<i>SD</i>	Rank	<i>M</i>	<i>SD</i>	Rank		
Affiliation	2.02	1.64	11	2.27	1.35	13	2156.0	.290
Appearance	3.33	1.26	8	3.53	1.08	3	2198.5	.274
Challenge	2.44	1.55	10	3.25	1.12	11	1679.5	.003*
Competition	1.84	1.62	12	2.72	1.55	12	1640.0	.002*
Enjoyment	3.47	1.45	6	3.35	1.34	9	2249.5	.494
Health pressures	1.59	1.44	14	1.96	1.34	14	1955.0	.062
Ill-health avoidance	3.90	1.03	2	3.43	1.10	4	1840.5	.012
Nimbleness	3.22	1.48	9	3.39	1.19	7	2310.0	.659
Positive health	4.31	0.77	1	3.94	0.96	1	1871.0	.025
Revitalization	3.72	1.30	3	3.32	1.10	10	1788.5	.001*
Social recognition	1.61	1.60	13	3.40	1.31	6	1660.0	.002*
Strength and endurance	3.63	1.37	4	3.86	1.04	2	2282.0	.578
Stress management	3.38	1.48	7	3.36	1.24	8	2307.5	.652
Weight management	3.61	1.28	5	3.41	1.28	5	2259.0	.392

Note. Mean of exercise motivation range = 0 (*Not at all true for me*) to 5 (*Very true for me*). \*Collected significance at alpha level .003.

**Mean Difference on Exercise Motivation Between Male International and Domestic Students**

The Mann-Whitney *U* test was used to identify the mean rank differences between male international and domestic students' scores on the 14 EMI-2 scores for exercise motivations. The results, as presented in Table 3, indicated male international students in this sample were statistically more motivated to exercise for positive health than male domestic students.

**Table 3: Mann-Whitney *U* Test Results for Mean Difference and Ranking on Exercise Motivation Between Male International and Domestic Students**

Subscale	International			Domestic			<i>U</i> scores	<i>p</i>
	<i>M</i>	<i>SD</i>	Rank	<i>M</i>	<i>SD</i>	Rank		
Affiliation	2.36	1.73	11	2.30	1.29	13	544.0	.921
Appearance	3.51	1.01	6	3.30	1.10	4	545.5	.936

Subscale	International			Domestic			U scores	p
	M	SD	Rank	M	SD	Rank		
Challenge	2.70	1.59	10	3.20	1.15	6	456.0	.237
Competition	2.35	1.42	12	3.10	1.47	10	373.5	.028
Enjoyment	3.76	1.26	5	3.14	1.33	9	389.5	.045
Health pressures	1.72	1.58	14	1.82	1.26	14	505.0	.562
Ill-health avoidance	3.87	1.07	4	3.18	1.19	7	369.5	.024
Nimbleness	3.41	1.32	8	3.31	1.22	3	513.5	.635
Positive health	4.49	0.59	1	3.75	1.03	2	301.0	.002*
Revitalization	3.99	1.01	3	3.23	1.04	5	287.5	.045
Social recognition	1.88	1.78	13	2.46	1.33	12	434.5	.147
Strength and endurance	4.01	1.10	2	3.86	1.06	1	489.5	.437
Stress management	3.48	1.29	7	3.15	1.39	8	489.0	.437
Weight management	3.24	1.29	9	2.91	1.32	11	513.5	.635

Note. Mean of exercise motivation range = 0 (*Not at all true for me*) to 5 (*Very true for me*). \*Collected significance at alpha level .003.

**Mean Difference on Exercise Motivation Between Female International and = Domestic Students**

As reported in Table 4, the ranked means of the 14 EMI-2 scores for exercise motivations were compared between female international and domestic students using the Mann-Whitney U test. Results showed that female domestic students in this sample had statistically higher exercise motivation scores for challenge and social recognition.

**Table 4: Mann-Whitney U Test Results for Mean Difference and Ranking on Exercise Motivation Between Female International and Domestic Students**

Subscale	International			Domestic			U scores	p
	M	SD	Rank	M	SD	Rank		
Affiliation	1.65	1.49	11	2.24	1.41	13	508.0	.112
Appearance	3.15	1.48	7	3.70	1.03	4	547.5	.142
Challenge	2.17	1.49	10	3.29	1.10	10	375.0	.003*
Competition	1.29	1.68	14	2.44	1.57	11	382.0	.004
Enjoyment	3.14	1.60	8	3.51	1.35	7	577.5	.383
Health pressures	1.44	1.30	12	2.06	1.40	14	459.0	.036
Ill-health avoidance	3.92	1.00	3	3.61	1.00	5	553.0	.157
Nimbleness	3.02	1.65	9	3.46	1.18	8	568.0	.332
Positive health	4.11	0.90	1	4.09	0.89	1	649.0	.895



Subscale	International			Domestic			U	
	<i>M</i>	<i>SD</i>	Rank	<i>M</i>	<i>SD</i>	Rank	scores	<i>p</i>
Revitalization	3.44	1.53	4	3.39	1.15	9	614.0	.426
Social recognition	1.32	1.36	13	2.35	1.31	12	364.5	.002*
Strength and endurance	3.22	1.54	6	3.86	1.03	2	502.0	.098
Stress management	3.27	1.70	5	3.52	1.09	6	651.0	.913
Weight management	4.01	1.18	2	3.78	1.19	3	594.5	.317

*Note.* Mean of exercise motivation range = 0 (*Not at all true for me*) to 5 (*Very true for me*). \*Collected significance at alpha level .003.

### Rankings of Motivations

In addition to investigating mean differences, means were transformed into rankings to provide comparisons of the overall importance of specific motives as shown in Tables 2, 3, and 4. The ranking of the dimensions revealed that in this current study, both international and domestic students were most motivated to exercise for positive health. Ill-health avoidance, strength and endurance, and weight management were also in the top five motives for exercise for both international and domestic students. The lowest exercise motivation for both groups was health pressures. Affiliation, competition, and challenge were all rated in the lowest five motives for both groups (Table 2). In addition, revitalization was clearly more important for international students, while the motives of appearance and social recognition were more important for domestic students.

Comparison of rankings of female international and domestic students in this sample clearly showed that some motives were more important than others (Table 4). Both groups ranked positive health as the most important motive for exercise and also included weight management and ill-health avoidance as motives within their top five rankings. Even though they did not equally rank each, both international and domestic female college students ranked the interpersonal motives of competition, social recognition, and affiliation, as well as challenge and health pressures in their lowest five motives to exercise.

As shown in Table 3, both international and domestic male students ranked positive health and strength and endurance as their top two reasons to exercise in this study. Male students ranked health pressures as the lowest motive to exercise. Additionally, interpersonal motives to exercise such as social recognition, competition, and affiliation were clearly less important for both groups of male college students.

## DISCUSSION

This study was designed to assess differences between international and domestic students in the 14 exercise motivations from the modified version of the EMI-2

(Markland & Ingledew, 1997). In this study, researchers investigated the motivational differences between international and domestic college students, as well as the differences between international and domestic college students of the same sex. Our analyses revealed that positive health was the highest exercise motivation for both international and domestic students in this study. This result was supported by previous literature that students might already know the importance of exercise on their physiological benefits (Furia et al., 2009; Rivers & Dilger, 2015). Health pressures was the lowest motivation for both groups, which is supported by Egli et al. (2011), and it could be hypothesized that college students are typically young and less concerned with health pressures.

Overall comparisons of international and domestic students from this study indicated significant differences between exercise motivations for four of the subscales. International students in this study were more motivated to exercise for revitalization than the sampled domestic students. It is possible that the decreased motivation for interpersonal reasons of the sampled international students is a result of the social and cultural constraints to participation in physical activity for international students (Cho & Price, 2018; Glass et al., 2014). The findings of this current study support the SDT as individuals have a basic need to be connected with others—in this case, domestic students' significant motivations were about relationships with others (Deci & Ryan, 2000). More specifically, as the international participants' ethnicity leaned toward Asians, this study confirms previous research that Koreans students might regard their culture as more horizontally and vertically collectivistic, while U.S. students can see their culture as greater horizontal and vertical individualism than Koreans' (Chirkov et al., 2003).

College health professionals might consider adapting different strategies for encouraging exercise between international and domestic students. For example, competition and social interaction might be important for health promotion to domestic students, while creating a culturally welcoming environment may be beneficial for international students. Future research is needed to generalize these findings. Additionally, future research could determine the correlation between the effectiveness of health promotion and the exercise motivation of the participants.

Analysis of male international and domestic students revealed that both groups were most strongly motivated to exercise for positive health and strength and endurance, and least motivated for affiliation, social recognition, and health pressures, which is supported by Egli et al. (2011). The international male students in this study were significantly more motivated to exercise for positive health than domestic male participants. While both groups of males were highly motivated to exercise for positive health, it could be important for health professionals to recognize that international males place significantly higher value on positive health benefits than domestic male students.

Both international and domestic female students in this study indicated that positive health was the most important motive to exercise, while health pressures, social recognition, competition, and affiliation were least important. In the comparison of international and domestic female students, the domestic females were more motivated to exercise for the more extrinsic motives of challenge and social recognition. Health professionals may need to use more extrinsic factors for

introducing exercise to domestic females such as weight loss programs and then help them to progress to more intrinsic motivations as intrinsic motivation has been tied to exercise adherence (Kilpatrick et al., 2005).

Exercise motivation has been the foundation of exercise adherence research (Markland & Ingledew, 1997). However, there has been little to no research to compare if differences in motivation occur between international and domestic college students. Our findings suggest that exercising for health and psychological well-being may be more motivational for international students than domestic, and this trend is repeated when comparing male students. The findings further suggest that female domestic students are more motivated to exercise for challenge, competition, and social recognition than female international students. Health professionals who work to promote the health of college students through exercise adherence should recognize that there may be differences in the motivation of international and domestic students.

We might also suggest that college health promoters should consider pre-existing motives when trying to engage students. Ingledew and Markland (2008) suggested that adults may exercise for a variety of motives and that exercise programs should appeal to individual motives. Using these pre-existing motives may be useful in attracting students, at which point strongly intrinsic motives like well-being and enjoyment can be emphasized. Appropriate efforts for increased exercise adherence for international students may need to include programming that emphasizes the health and psychological benefits, while emphasis of interpersonal motives may be more appropriate for domestic students.

The EMI-2 is a measure of motivation, but it does not consider the level of autonomy of an individual. The differences between our sample of international and domestic students may not indicate a difference in autonomy. According to SDT, autonomy is achieved when a person fully endorses their activity. Chirkov et al. (2003) found that cultural differences in behavior and attitudes, whether individualistic or collectivistic, can both be autonomous and positively related to higher well-being.

## **Limitations**

Despite significant findings, this current study is provided with limitations. The main limitation is the low international student participation rate that may have disrupted the significance of the findings. A study of one university in one geographic region with a relatively small sample of students limits the generalization of the results. Future studies should recruit a larger sample size of international students to strengthen the statistical power. Additionally, the ability to generalize these findings is limited due to convenience sampling used via the university online active research participation system. The use of convenience sampling might create bias in data gathering or sampling error. The separate recruitment effort by the International Students Affairs office to increase participation from international students may have further elicited responses that do not reflect the entire student population. Another limitation is that this survey only asked respondents if they were international or domestic and did not differentiate the respondents' ethnicity nor nationality. Future

studies are encouraged to compare differences that may exist between international students of different cultural backgrounds as this current survey site's international population leaned toward Asians.

## CONCLUSION

During the past two decades, the number of college students has been increasing, as well as the number of international college students (Institute of International Education, 2018; Snyder et al., 2018). Additionally, universities have been giving more consideration to the importance of students developing and maintaining healthy lifestyles. However, campus administration and wellness departments may not be fully prepared to encourage healthy lifestyles for their international students. It is likely that international students have different constraints than domestic students due to differences in attitudes about academic achievement and other cultural differences. This current study indicates there might be a difference in exercise motivation between international and domestic students. As the results revealed, domestic students were more likely to exercise because of challenge, competition, or social recognition, while revitalization was a significantly higher exercise motivation for international students. This study supports the need for campus health professionals to develop exercise programs specifically focused to meet the motivations of international students. For instance, campus wellness departments may need to encourage domestic students' participation in more socialized, challenged, and competitive campus-wide exercise programs such as intramural sports, outdoor challenge courses, and other special events, while encouraging international students to focus on their revitalization and positive health by providing small group exercise programs or popular exercise programs from their own culture.

## Acknowledgement

This work was supported by Dongseo University, Dongseo Cluster Project Research Fund of 2019 (DSU-20190001).

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**DONGWOOK CHO**, PhD, is an assistant professor in the Department of Health, Physical Education and Recreation at Alcorn State University. The primary areas of his research interests are motivations and constraints of physical and leisure activities, recreation, exercise, and sport participation with different age groups, racial minorities, and ethnic groups. Email: [dcho@alcorn.edu](mailto:dcho@alcorn.edu)

**STEVE BECK**, PhD, is the State 4-H Youth Development Program Leader at Oklahoma State University. His research interests include place bonding, positive youth development, and recreational motivation. Email: [steve.beck@okstate.edu](mailto:steve.beck@okstate.edu)

**SUNG KYOEM KIM**, PhD, is an associate professor in the Department of Leisure and Sport Sciences at Dongseo University. His major research interests lie in the areas of sport, exercise, and leisure participation behavior, attitude, and satisfaction levels. Email: [kdba13@hanmail.net](mailto:kdba13@hanmail.net)

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