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The Fitness and Wellness IQ: Measuring College Student Learning in Campus Recreation Fitness and Wellness Programs

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Abstract

Collegiate campus recreation departments are held to increasingly higher levels of accountability, particularly as to whether recreational programs and activities have impact on student learning. This pioneering study found that students who participated in selected fitness and wellness programs offered by a certain four-year, public institution of higher education in the Mid-west scored significantly higher ($t = 3.865$, $\alpha = .000$, $sd = 2.68$) on an exam (the Fitness and Wellness IQ) designed to test their knowledge and understanding of appropriate fitness and wellness practices. Certain demographic categories (gender, age, and residence) produced significant differences in mean scores. These findings have important ramifications for campus recreation departments, divisions of student affairs, and institutions of higher education in general based on the impact on student learning from traditionally non-academic institutional programming.

The concepts of fitness and wellness have become increasingly important in the administration of campus recreation programs at universities and colleges across the country and have been made ever more so by the recent interest in and impact of *Learning Reconsidered 2* (Keeling, 2006). Fitness and wellness knowledge has gained in interest among university and college campuses, especially campus recreation programs. Most university and college administrators would acknowledge that students learning good fitness and wellness practices, and leaving the institution with such knowledge, is an important contribution that recreational sports makes to a student's well-being, if not their overall education. Organizations such as the American College of Sports Medicine (ACSM), National Intramural Recreational Sports Association (NIRSA), and the American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) support and promote the importance of fitness and wellness practices among colleges and universities.

Furthermore, institutions of higher education are expected to be more accountable than ever; not just for financial resources, but also for impact on student learning (Keeling, 2006). The Council for the Advancement of Standards in Higher Education (CAS) released its most recent standards for recreational sports programs with a mission, "to promote the improvement of programs and services to enhance the quality of student learning and development" (Council for the Advancement of Standards in Higher Education, 2008). These standards guide recreational sports programs in learning and assessment outcomes and were inspired by *Learning Reconsidered* (Keeling, 2004) and *Learning Reconsidered 2* (Keeling, 2006). Specific CAS outcomes for recreational sports wellness programs state that wellness programs should "encourage achievement of one's full health potential. These programs should provide an opportunity to work cooperatively with professionals in health services including counselors and physicians, and may be accomplished in concert with others who are similarly oriented" (CAS standards, 2005). Even traditional service-oriented units, such as multicultural student affairs and campus recreation departments are expected to have a positive influence on student learning through

CAS standards. This is done primarily through the identification and development of learning outcomes and the tools to measure them.

In today's higher education environment, developing learning outcomes has become an important consideration at all institutional levels, including departments of campus recreation. Student Affairs units have generally accepted the concepts put forth in *Learning Reconsidered* (Keeling, 2004), and more recently *Learning Reconsidered 2* (Keeling, 2006). *Learning Reconsidered 2* was instrumental in laying the groundwork for the development of assessments that would further reveal and even justify the role of student affairs programming in enhancing student learning. The concepts addressed in *Learning Reconsidered 2* provided a foundation for the concepts of student learning outcomes, especially for student affairs oriented departments. NIRSA plays a major role in making sure that the tenets espoused in *Learning Reconsidered 2* are promulgated in campus recreation programs across the United States through providing recommendations and supporting research to its member institutions.

Related Literature

There has been a plethora of research conducted regarding the impact of a campus recreation program on students. These studies typically address retention, socialization, and student development from a student affairs mindset, but do not specifically deal with how a campus recreation program contributes to a student's basic knowledge of fitness and wellness, or contributes more generally to student learning. Henchy (2011) discussed the impact of campus recreation programs on student retention in regard to building a sense of community and student involvement in on-campus activities. It was found that involvement in campus recreation programming contributed to overall student satisfaction with the university (Henchy, 2011). This involvement led to increased student retention rates, yet no discussion on the academic impact of such programs was addressed (Henchy, 2011).

Lindsey, Sessoms, and Willis (2009) also discussed the impact of campus recreation programs on African American student recruitment and retention. The findings in this study were consistent

with Henchy (2011) in that the availability of campus recreation programs played a significant role in the student's decision to attend the particular university population studied. According to Lindsey et al. (2009) "Forty-seven percent of the students surveyed reported that the availability of recreational sports was important/very important in deciding to continue at college" (p. 29). Moffitt (2010) added to the literature regarding the relationship between student retention, academic success, and campus recreation programming. The results of this study indicated that campus recreation program participation had a statistically significant effect on student academics (Moffitt, 2010). These findings support the contentions of both Henchy (2011) and Lindsey et al. (2009), however, little research has been conducted in relationship to the overall impact of campus recreation programs on the basic fitness and wellness knowledge of students.

In addition to the lack of student learning research in campus recreation, there has been little research on specific learning outcomes established by campus recreation programs within divisions of student affairs. The current research provides extensive discussion on the process of developing learning outcomes for campus recreation departments, but little research has been done on the potential gains in fitness and wellness knowledge among participants in campus recreation programs. Present learning outcome research for campus recreation programs has placed a general focus on the student's ability to effectively contribute to society upon graduation. For example, Cooper, Flood, and Gardner (2009), outlined the following learning outcomes for a campus recreation program, time management, social competence, achievement motivation, intellectual flexibility, task leadership, emotional control, active initiative, self-confidence which all stem from the Life Effectiveness Questionnaire-version H (LEQ-vH). There is little consideration given to student academic learning within the article, rather, a general focus placed on development of basic life-skills as described in Cooper et al.'s (2009) learning outcomes.

Fortman and Haines (2011) developed the Measuring Outcomes from Recsports Experiences (MORE) based on Keeling's

(2006) *Learning Reconsidered 2* to include learning outcomes such as effective communication, enhanced self-esteem, realistic self-appraisal, leadership development, life skills, healthy behaviors, and satisfying and productive lifestyle. These learning outcomes describe the overall development of student participation in campus recreation programs, but do not specifically address the impact of these programs on the fitness and wellness knowledge of students participating in these programs.

The amount of fitness and wellness knowledge that a student could obtain from participation in a campus recreation program potentially-contributes to overall socialization. However, there are a number of other benefits to the student that can be derived from this knowledge. These benefits include the ability to take control of one's life, manage stress, experience physical fitness gains, and contribute to the economic status of the nation by lowering health care costs and paying fitness and wellness professionals for these services (Hoeger & Hoeger, 2011). Student learning through institutionally provided campus recreation fitness and wellness programs has not been researched though there are a number of benefits to the student by learning about fitness and wellness through participation in these programs.

As Keeling (2006) indicated in *Learning Reconsidered 2*, "Student affairs educators...want to demonstrate that there must be an assessment of quality and value---in terms of student learning---in every program and activity" (p. 2) . It is important to take research conducted in a program most often housed in student affairs, campus recreation, and conduct research that tests whether learning has occurred during in any of the activities offered by such a program. Therefore, the purpose of this investigation was twofold: 1) To develop and deploy pedagogy to student participants in institutional provided fitness and wellness programs, and 2) to compare their fitness and wellness knowledge to that of students who did not participate in institutional provided fitness and wellness programs.

Methods

Instrument Development

Following an extensive review of previous research and other available fitness and wellness knowledge tests, it was found that there were very few instruments available from scholarly sources or nationally recognized fitness bodies designed to measure the comprehensive fitness and wellness knowledge of a college fitness and wellness participant. This review led to the development of a specialized Fitness and Wellness IQ test that was used to determine the knowledge of students following their participation in certain campus recreation fitness and wellness programs. The Fitness and Wellness IQ test was a series of 25 multiple-choice questions. Each question contained four possible choices, with only one answer serving as the best possible choice. Eight demographic questions were included and typified those included in survey research in campus recreation: gender, ethnicity, age, grade point average (GPA), class standing, college or independent school, intercollegiate athlete, and residence. In developing the Fitness and Wellness IQ test, consideration was given to guidelines and parameters set by the Diagnostic Statistical Manual of Mental Disorders (DSM-IV), the American College of Sports Medicine, Center for Disease Control (CDC), the Aerobics Fitness Association of America (AFAA), and the American Dietetics Association. Questions were developed from these sources. The authors secured a Human Subjects Review Form from the office of Institutional Research at the institution studied. The research proposal received approval from the Institutional Research Board.

Design

The research design was experimental. Participants who enrolled in the fitness and wellness programs underwent an “intervention” that was threefold: 1) the fitness wellness instructors presented salient fitness and wellness information during each of their class meetings, 2) the participants received the same information, as a reinforcement of the information conveyed by the instructors, through weekly e-mails, and 3) the same information

was posted in selected areas of the recreation center at the institution that participated in the study. These areas were identified as those in which it was likely that the participants would notice it, such as the fitness floor and the fitness and wellness suite.

Following these interventions, and at the conclusion of the particular fitness and wellness programs, the Fitness and Wellness IQ was administered first to participants of fitness and wellness programs provided by a department of recreational sports at the institution which participated in the study. The exam was similar to one a student might be required to take in a credit class, the questions were multiple choice. Although reliability coefficients were somewhat low ($r = 0.40$), the test was piloted with a group of students enrolled in Fitness or Wellness classes, and the questions were reworked. The actual trial produced only slightly higher coefficients ($r = 0.45$).

Participants

The study was conducted at a four-year, public institution of higher education in the mid-west with a total enrollment of approximately 24,000 students. A total of 243 participants in fitness and wellness programs agreed to take the Fitness and Wellness IQ test. These participants self-selected from a total of 550 students who were enrolled in the fitness and wellness programs, meaning that 44.2 percent of those who were enrolled agreed to take the Fitness and Wellness IQ test. The Fitness and Wellness IQ test was also administered to a randomly selected group of students who had never participated in any fitness or wellness programs offered by the recreational sports department at any time as a student at the institution. Although 110 students who fit this category took the exam, the SPSS statistical analysis employed automatically adjusted for an unequal sample size when an independent samples t-test was conducted. It was also determined that of those students who listed their gender, the total number of females who took the test was 295 (84.8%), and the total number of males was 53 (15.2%). The number of traditionally-aged students enrolled in the fitness and wellness programs who took the test was 163 (73.8%), while the number of traditionally-aged students who took the test but were never enrolled

in the programs at the institution was 58 (16.2%). The number of non-traditionally aged students enrolled in the fitness and wellness programs who took the test was 75 (68.2%), while the number of non-traditionally students who took the test but were never enrolled in the programs at the institution was 35 (31.8%). Finally, the number of commuter students enrolled in the fitness and wellness programs who took the test was 93 (54.1%), while the number of commuter students who took the test but were never enrolled in the programs at the institution was 79 (45.9%).

Data Analysis

The researchers conducted an independent samples t-test using the SPSS version 15.0.1 statistical package. All data were tested at $\alpha = .05$, the level commonly used in inferential research in the field of recreational sports. Means and standard deviations were employed to compare the test scores of students who participated in the fitness and wellness programs against the test scores of students who had never participated in the fitness and wellness programs offered by the institution's campus recreation department.

Results

Overall, a significant difference was found between the mean scores of the two groups ($t = 3.865$, $\alpha = .000$, $sd = 2.68$). The mean score on the exam of the students who participated in the offered fitness and wellness activities was 14.41 ($sd = 2.68$). The group that had never enrolled in fitness and wellness programs produced a mean score of 13.25 ($sd = 2.58$), (Table 1) the overall difference in mean score between the group who enrolled in the fitness and wellness programs and those who had never enrolled was 1.16. Although this research did not factor out prior participation in fitness and wellness programs, it was safe to report about those who participated. Those students who participated in certain fitness and wellness programs at the institution studied in this investigation had a better understanding of appropriate fitness and wellness constructs than those who did not participate. Students who were enrolled in the fitness and wellness programs had a significantly higher understanding and knowledge of good fitness and wellness concepts

and practices. The research also considered other comparisons based on selected demographics. The following sections discuss statistically significant differences found based on gender, age, and residence.

Gender

The study found that women who participated in the fitness and wellness programs in which the intervention occurred scored significantly higher than women who did not participate in the fitness and wellness programs ($t= 3.09, \alpha = .002$). The mean difference between the two groups was 1.10 ($N= 295$), a mean of 14.47 ($n= 219, sd= 2.69$) for those who were enrolled in the fitness and wellness programs versus 13.37 ($n= 76, sd= 2.78$) for those who had never enrolled. No differences were found between males who were enrolled in the programs and those who had never enrolled (Table 1).

Age

In regard to age, the study found that both male and female traditionally-aged students, defined as those aged 17 to 24 years, who were enrolled in the fitness and wellness programs scored significantly higher than the traditionally-aged students who had never enrolled in the programs ($t= 2.30, \alpha = .023$). The mean difference in scores between these two groups was 0.88 ($N = 221$), a mean of 14.43 ($n= 163, sd= 2.48$) for those who were enrolled in the fitness and wellness programs versus 13.55 ($n= 58, sd= 2.56$) for those who had never enrolled.

Non-traditionally aged male and female students who were enrolled in the fitness and wellness programs, those 25 years of age and older, were also found to score significantly higher than those who had never enrolled in the programs ($t= 2.03, \alpha = .044$). The mean difference in scores between these two groups was 1.21 ($N= 110$), a mean of 14.52 ($n= 75, sd= 3.06$) for those who were enrolled in the fitness and wellness programs versus a mean of 13.31 ($n= 35, sd= 2.51$) for those who never enrolled (Table 1).

Residence

Finally, the study found that commuter students who were enrolled in the fitness and wellness programs scored significantly higher than the commuter students who had never enrolled in the programs ($t = 3.58, \alpha = .000$). The mean difference in scores between the two groups was the highest observed in any of the tests, 1.31 ($N = 172$), with a mean of 14.94 ($n = 93, sd = 2.45$) for those who were enrolled in the fitness and wellness programs versus a mean of 13.58 ($n = 79, sd = 2.49$) for those who had never enrolled. No difference was found between residence hall students enrolled in the programs and residence hall students who had never enrolled (Table 1).

Table 1 Independent *Samples T-Test Results*

Variable	N		Mean	Mean Diff.	Std Dev	t	p
Overall	Participant	242	14.41	1.16	2.68	3.87	.000
	Non-Participant	110	13.25		2.58		
Gender (F)	Participant	219	14.47	1.10	2.69	3.09	.002
	Non-Participant	76	13.37		2.78		
Traditional Age (17 - 24)	Participant	163	14.43	0.88	2.48	2.30	.023
	Non-Participant	58	13.55		2.56		
Non-Traditional Age (25+)	Participant	75	14.52	1.21	3.06	2.03	.044
	Non-Participant	35	13.31		2.51		
Residence, Commuter	Participant	93	14.94	1.36	2.45	3.58	.000
	Non-Participant	79	13.56		2.49		

Discussion

Overall Participation

The results of this research study provided pioneering information on the potential impact of fitness and wellness programs in student learning. A primary strength of the Fitness and Wellness IQ test was that there were no scholarly tests available of its kind.

The test provided a measure of student knowledge gained from participation in campus recreation fitness and wellness programs. These results indicated that students who participated in the selected fitness and wellness programs at the institution under study scored significantly higher on the Fitness and Wellness IQ test than students who had never participated in the programs. This finding has important implications for campus recreation. The first is that, at least at this institution, the fitness and wellness programs had a beneficial impact on the fitness and wellness knowledge of students who participated in the programs.

Related research conducted by Vansickle, Hancher-Rauch, and Hicks (2010) reported that fitness programs were an effective way of implementing fitness pedagogy and creating an interaction between faculty and staff members. In this study, Vansickle et al. (2010) created a fitness program model that increased the knowledge about fitness and wellness of the faculty and staff on the Indiana University campus. Certain campus recreation fitness and wellness programs had a positive impact on student learning. It remains to be seen whether the same could be true of other campus recreation programs, or other student affairs programs for that matter. However, the fact that students who were in the programs scored higher on the Fitness and Wellness IQ increases the value and importance of campus recreation fitness and wellness programs, and appears to enhance the need for such programs on college campuses, or certainly at this particular campus.

Furthermore, the results of this study support the need for campus recreation programs on college campuses. Through the statistically significant findings, there is empirical evidence that the student population at this institution should be provided with programs that house student learning in the areas of fitness and wellness and that campus recreation can assist in student learning in addition to its academic and student affairs counterparts. This study can also help campus recreation programs build an educationally based curriculum. Campus recreation can now make fitness and wellness a priority to integrate into the lives of students and create an education framework for fitness and wellness learning outcomes. The research serves as a stepping stone for campus recreation to

continue to build fitness and wellness programs that will support its purpose and enhances the lives of students on a college or university campus similar to what was proposed in the Vansickle et al. (2010) study on Indiana University's faculty and staff.

Gender

Gender results indicate that female students who participated in fitness and wellness programs scored significantly higher than those females who did not participate in these programs. Conversely, it was determined that there were no differences among the male students regardless of participation in the fitness and wellness programs. There are several positive implications for campus recreation that stem from the results of this demographic. First, the need for fitness and wellness programs that continue to target female students was reinforced. Based on this finding, campus recreation can and should, continue to design fitness and wellness programs specifically for females in order to educate them on the importance of lifetime fitness and wellness. In fact, it could be argued, based on the findings, that additional institutional and departmental funding be devoted to the enhancement of such programs for female students. Fitness and wellness instruction or activity programs have long been recognized as one of the most utilized programs by female students, and the results of this study indicate that they are learning valuable information that complements the benefits of the physical activity. The second implication of these findings is that campus recreation programs are now aware of the statistical indifference in fitness and wellness knowledge among males. This could mean that the male population is more educated in the area of fitness and wellness based on lifestyle and socialization factors involving certain aspects of fitness and wellness including weightlifting, sport participation, and the like.

Age

Findings in the age demographic indicated that fitness and wellness programs had significant effects on the knowledge base of participants regardless of age and that these programs indeed had a

positive influence on student learning. The age differentiation, traditionally aged students vs. non-traditionally aged students is a frequently studied demographic in campus recreation participation research, most of it reporting that traditionally aged students were more likely to enter recreational facilities (Milton & Patton, 2011), were more likely to participate in organized campus recreational sports (Barcelona & Ross, 2002), and more likely to participate in campus recreation in general (Frauman, 2005) than were their nontraditionally aged counterparts. The results of this study do not contradict the aforementioned disparity in actual participation numbers between the two age groups; rather it validates the existence of such programs for both groups. In fact, it could be argued that fitness and wellness programs be expanded particularly for non-traditionally aged students because of the long held, and well documented belief that older students are often disenfranchised from participation in most non-academic programs in America's colleges and universities.

Residence

The results of the residential factor indicated that commuter students who were involved in fitness and wellness programs scored higher than those students who commuted and did not participate in these programs. There was no significant difference between those students who stayed in the residence halls. This may be because students who live on campus are constantly exposed to fitness and wellness flyers, friends on sports teams at the institution that may have to follow certain guidelines that deal with fitness and wellness, or who already have constant access to a weight room or cardio machines. Participants who are surrounded by these types of information may become unresponsive to fitness and wellness information compared to those who commute. Commuters may not be exposed to the same amount of subliminal messages as resident students which, in part, would explain the lack of fitness and wellness knowledge, and the potential for a more dramatic increase in such knowledge. Bahrami (2007), of the UCL Institute of Cognitive Neuroscience conducted a study testing “whether an

image you are not aware of has an impact on brain activity” (p. 1). Bahrami (2007) stated,

Your brain does log things that you aren't even aware of and can't ever become aware of. We show that there is a brain response in the primary visual cortex to subliminal images that attract our attention -- without us having the impression of having seen anything. (p. 1)

These findings suggest that those participants in the current study who live on campus are constantly processing fitness and wellness message in the campus recreational facility more than those who are commuters. An example would be a flyer posted in the campus recreational facility inviting students to an event that has a small phrase or symbol hinting towards fitness and wellness without them being aware of it. Based on Bahrami's (2007) findings, subliminal messages can have a huge impact on how much information a participant may come in contact with, whether participants are aware of it or not. The normalcy of fitness and wellness information could affect how the residence hall participants perceive the fitness and well programs.

Limitations

The findings of this study are relevant to like-sized four-year public institutions of higher education with a Carnegie Research Extensive designation. However, caution must be observed in applying the results in such settings. Each institution of higher education is different and the effectiveness of the Fitness and Wellness IQ test could also vary. Careful consideration must be given to the demographics of the student population in comparison institutions to ensure the effectiveness of the test among all institutions of higher education and campus recreation programs.

Another limitation is that no pre-test was given the students who participated in the programs to serve as a control for prior knowledge and understanding of wellness and fitness practices. The results of the tests still suggest that students participating in fitness

and wellness programs significantly increased their knowledge of fitness and wellness through participation in these programs as compared to their counterparts who did not utilize the programs. The study did not collect data on the daily fitness and wellness behaviors of the participants. Information on the daily fitness and wellness behaviors such as eating habits, dieting, activity levels, and recreational sports participation could have added participant bias.

The coefficients of reliability were low enough to be of some concern about the usefulness of the results. Statistically significant differences in the test score means suggest that learning did occur among those who enrolled in the programs, at least on the questions asked on the Fitness and Wellness IQ.

Future Research

There are a number of opportunities for future research regarding student learning within fitness and wellness programs. Additional participant demographics could be collected prior to the study in order to assess whether sport participation or other factors played a role in the fitness and wellness knowledge of the tested students. Other demographics might include sport participation prior to this study and a structured environment with diet. This could assist the researchers in concluding whether fitness and wellness program participation was the contributing factor in regard to the Fitness and Wellness IQ scores. A pre-test could also be given to assess the previous fitness and wellness knowledge of the students tested. This would provide the researchers with more information on the change in knowledge before and after participating in fitness and wellness programs. Other versions of this test should include a pre and post-test in order to generate the most accurate data regarding the effectiveness of the Fitness and Wellness IQ test. Another opportunity for future research is to compare four-year institutions to two-year institutions. Comparing different types of institutions would allow for more accurate findings for all campus recreation programs and institutions as well as a larger population to sample.

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