

FACTORS INFLUENCING THE USE OF FITNESS AND RECREATION CENTERS BY COLLEGE STUDENTS

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Abstract: The rising rates of obesity and other chronic diseases among college students have led to a growing demand for fitness and recreation centers on college campuses. These centers offer a variety of services, such as exercise classes, intramural sports, and health and wellness programming, to help students improve their overall health and well-being.

Keywords: fitness and recreation centers, college students, obesity, chronic diseases, health and wellness

Introduction

Over the past several years, factors relating to the overall health and wellness of college students have caused colleges and universities to adapt their recreational services to the student population.

These services include student recreation centers and/or fitness centers, exercise classes, intramural programs, and health and wellness programming to enhance opportunities for physical fitness and an overall improvement in health status of college students. In response to the rise in obesity rates, society is looking toward fitness and recreation centers as a contributing factor in trying to combat this nationwide problem, which is affecting millions of young adults (Watson, Ayers, Zizzi, & Naoi, 2006). The construction of student fitness and recreation centers on college campuses has become a massive business over the last several years (Miller, Noland, Rayens, & Staten, 2008).

Although society has recognized the need for recreational facilities in improving overall quality of life in the student body, it is reported that college age students are not getting an adequate amount of physical activity. Kilpatrick, Hebert, & Bartholomew (2005) state that the level of physical activity declines from high school to college, and activity patterns in college populations are generally insufficient to improve health and fitness. Specifically, only 38% of college students participate in regular vigorous activity. Only 20% participate in regular moderate activity. Estimates suggest that up to 50% of college students do not use their student recreation centers (SRC) (NIRSA, 2002). More seriously, it is also reported that almost half of college students report a decrease in physical activity after graduation. Many students are already sedentary upon entering college and physical activity levels further decline during the college years (Caspersen, Pereira, & Curran, 2000). Sedentary behavior is related to increased risk of death as a result of the development of chronic disease as well as depression and anxiety-related problems (Camacho, Roberts, Lazarus, Kaplan & Cohen, 1991).

“For college students in particular, physical activity protects against unhealthy weight gain, a means to manage the effects of the stresses of college life, and early prevention against future chronic disease” (Miller et al., 2008,

p.87). Bryant, Banta & Bradley (1995) suggest that the primary reasons for students leaving schools (lack of fit, inadequate social opportunities, and poor grades) may all be reduced through the use of a SRC.

To improve the effectiveness of these on-campus fitness and recreation centers, administrators, directors, and managers need to be aware of factors related to fitness and recreation center usage within the college setting. For this reason, it is important for fitness and recreation center managers and directors at colleges and universities to implement a campus facility with adequate health and wellness programs to ensure effective recruitment and retention of their students as well as overall health and wellness. This will serve as an outlet for students to create healthy behaviors during college, so they may continue them into their personal and professional lives after graduating.

Problem Statement

The purpose of this research is to investigate the factors related to usage of fitness and recreation centers on college campuses. This study will analyze specific demographics and the reasoning behind their pattern of usage.

Research Questions

1. What are the factors that influence fitness and recreation center participation?
2. Do specific demographic factors such as gender, ethnicity, alcohol and tobacco consumption have an effect on fitness and recreation center participation?
3. What are the primary factors that contribute to male and female non-usage in college fitness and recreation centers?
4. What are the primary factors behind male and female motivation to use college fitness and recreation centers?
5. Does motivation in relation to on-campus, off-campus, and commuter living situations have an effect on usage of fitness and recreation centers?

Limitations

1. This study assessed only one institution in western Pennsylvania, so data cannot be used to generalize college students as a whole.
2. This research does not take into great detail the adequacy or inadequacy of the campus recreational facilities or their programs.
3. Knowledge of existing facilities may affect participants' responses to the survey.

Review of Literature

The purpose of this study is to assess factors related to usage of campus fitness and recreation centers by college students. The review of literature will examine a.) The prevalence of obesity in society coupled with a lack of physical activity in college students, b.) How colleges and universities are using recreational facilities as a recruitment and retention mechanism, and c.) The primary reasons behind students' use of fitness and recreation centers.

Obesity and Lack of Physical Activity

The prevalence of obesity in America over the past several decades has been and continues to be a nationwide issue. In response to this issue, colleges and universities have been prompted to take considerable interest in their

fitness and recreational facilities and programs (Miller, et al., 2008). The U.S. Department of Labor and the Bureau of Labor Statistics (2009) reported that numerous college students engage in frequent sedentary behavior including spending hours in classrooms, time on school work and studying, using computers, and using video gaming systems. The importance of physical health within the student body is a concern for university administrators in attempting to tackle the obesity issue. Providing adequate health and wellness facilities and programs is pivotal in enhancing student wellness. Ogden and Carroll (2010) indicated that an estimated 34.2% of U.S. adults age 20 and older are overweight, 33.8% are obese, and 5.7% are extremely obese. Body mass index (BMI) is frequently used when categorizing extreme weight conditions such as: overweight, with a BMI of 25.0–29.9, obesity, with a BMI greater than or equal to 30.0, and extreme obesity, with a BMI greater than or equal to 40.0 (Ogden and Carroll, 2010).

Sax (1997) determined that a student's health and wellness in college years are paramount in determining healthy behavioral lifestyles throughout adulthood. This period of time in a student's life is when he or she develops behaviors that will either improve or discourage their overall quality of life in the future. The years a student spends in college are a period of time when primary causes of death and disease are significantly linked to the risky behavior choices of the individual (Sax, 1997).

Enhancing student wellness has been a point of emphasis for colleges and universities over the past several decades (Keating, Guan, Pinero, & Bridges, 2005).

In 2006, the National College Health Assessment was distributed and results from 94,806 students were obtained. Five health problems were identified, including (1) alcohol, tobacco, and other drug use, (2) sexual health, (3) weight, nutrition, and exercise, (4) mental health, and (5) personal safety and violence (ACHA, 2006). Addressing these issues is a very important step in promoting health and wellness to college students.

Benefits of physical activity have been rigorously documented in the literature. Specifically for college students, involvement in physical activity helps protect against weight gain, prevents possible chronic disease, and provides a mechanism for managing stress in college life (Miller et al., 2008). Particularly, “only 38% of college students participate in regular vigorous activity, and only 20% participate in regular moderate activity” (Kilpatrick et al., 2005, p.87). A cross-sectional study by Jones, Ainsworth, Croft, Macera, Lloyd, and Yusuf (1998, p. 285) reported that “65% of college-age women and 61% of college-age men do not meet the Centers for Disease Control and Prevention-American College of Sports Medicine (ACSM) guidelines for moderate physical activity.”

This excessive display of sedentary behavior is closely associated with risk of death from the development of chronic diseases (Blair, Kampert, Kohl, Barlow, Macera, Paffenbarger, & Gibbons, 1996) as well as depression and anxiety issues (Camacho et al., 1991). These illnesses are currently present in 20-30% of the adult population within the United States (Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen, & Kendler, 1994). These numbers represent a dramatic drop in physical activity within the transition period from high school to college life. In a recent study on the impact of new campus recreation centers by Zizzi, Ayers, Watson, & Keeler (2004), it was reported that rates of physical activity in the United States have not improved over the last 20 years regardless of significant funds spent on educational and informational programming (Buckworth, 2000; Dishman, 1994; USDHHS, 2000).

Usage Patterns

Students' initial decision to begin attending fitness and recreation centers as well as their decision on sustained usage involves many different factors. Willis and Campbell (1992) discuss five motivations- fitness, appearance, pleasure, social factors, and mental recreation- for engaging in physical activity. It has also been reported that age is the most significant factor in influencing involvement and adherence in sport and physical activity (Rudman, 1989).

In a study by Bryant et al. (1991), it was determined that 30% of initial enrollment decisions were a result of the quality of the campus recreational facilities. Adequacy or inadequacy of facilities, therefore, is suggested to play a factor in usage or non-usage. In a study on characteristics of users and non-users, participants completed an internet survey which yielded results that high-users had higher GPAs, lower fat intake, lower BMIs, and smoked less when compared with the moderate and non-user groups. The non-user group had significantly more time invested in electronic media as compared to the high-user group. This data suggests that the association between student academics and health measures is positively correlated with campus recreational facilities (Todd et al., 2009).

In an extensive study completed in 2004, Zizzi et al. assessed the impact of new student recreation centers. The researchers obtained results from two surveys. One was developed as a "user" survey meant for students who reported using their recreational facility or recreational programs on campus. The other was a "non-user" survey for students who reported not using these facilities or programs. Their results revealed similar results in that more users lived on campus, were non-smokers, had been high school athletes, and currently categorized themselves as regular exercisers as compared with non-users. Three main characteristics were determined to be motivating factors in users of student recreation centers. These motivations included staying in shape, aiding in fat loss, and increasing self-esteem. In regards to exercise barriers, lack of time, feeling too tired, other time commitments, and inconvenience prevented non-users from using the recreational facilities. The study also provided data to suggest that the construction of recreation centers on college campuses may promote regular physical activity from previously sedentary students. In this particular study, 40% of users reported that they were not exercising on a regular basis prior to the construction of the recreation center on their campus.

Drummond and Lenes (1997) take a broader look at the fitness industry and factors for initial involvement and sustained participation. They identify eight reasons for joining including socialization, intrinsic motivation, extrinsic motivation, aquatic-related facilities, recreational facilities, resistance equipment, aerobic equipment, and amenities. Several of these characteristics overlap with usage patterns found in that of students on college campuses. In a study by Miller et al. (2008), researchers aimed to determine demographic, psychosocial, and environmental characteristics associated with physical activity. Sallis, Bauman, and Pratt (1998) stated that the convenience of exercise facilities is significantly associated with physical activity. This supports the idea that students who live on campus are more likely to take advantage of the student recreation centers and fitness centers as opposed to students living off campus. Huston, Evenson, Bors & Gizlice (2003) have stated that individuals who have convenient access to facilities for physical activity are nearly twice as likely to take advantage of these facilities when compared with individuals without this access.

A study done by Haines (2001) also supported this idea of convenience in relation to living arrangement and fitness facility location. Results from NIRSA's Quality and Importance of Recreational Sports instrument taken by students at a large mid-western university indicated that 75% of males and 62% of females reported that the accessibility of recreational facilities and programs on campus was a significant predictor of initial enrollment at a specific college or university as well as their decision to stay at that university.

Results of a study by Miller et al. (2008), assessing characteristics of users and nonusers revealed that males were more likely to use the recreational facilities as opposed to females. Students participating were more likely to be lower-standing students (freshman and sophomores), and more likely to live on campus. Fraternity and sorority members used the facilities more than non-Greek students. Users had overall lower BMIs than non-users, and students reporting consuming alcohol within the past month were more likely to use the recreational facilities than students who did not consume this amount. A logistic regression model was also used to determine certain predictors of usage, including, "sex, class standing, living situation, belonging to a fraternity or sorority, and the desire to change one's weight" (Miller et al., 2008, p.93).

Perceived benefits to participation also play a significant role in fitness and recreation center initial involvement and continued use. Banta, Bradley & Bryant (1991) evaluated the significance of campus recreation programs at six different universities. Results from their data collection using NIRSA's QIRS instrument revealed the most frequent responses to benefits of recreational sports. These responses included "stress reduction, feeling of physical well-being, sense of accomplishment, weight control, sport skills, physical strength, fitness, and friendship.

Methodology

The purpose of this study was to investigate factors that influenced fitness and recreation center usage or non-usage within undergraduate students at a university located in western Pennsylvania. Specifically, this study aimed to evaluate the rationale behind students' use or lack of use of the recreational facilities and programs provided to them on campus through their activity fee. The primary objectives in this study were to (a) determine and comprehend the factors that influenced fitness and recreation center usage and non-usage (b) investigate whether specific demographic factors had an effect on fitness and recreation center participation and to (c) determine usage in relation to location of living situation at college.

Participants

Participants included a random sample of 1,100 students from the entire undergraduate population at the university totaling 12,827 students. The study aimed to analyze factors related to patterns of use in fitness and recreation centers within a higher education institution. Students were both male and female enrolled at the university for the spring semester and were between the ages of 18-25. The students' participation was completely voluntary.

Instrumentation

This study used a quantitative research design, and collected data through a descriptive 26-item adapted online questionnaire. The survey was distributed through Qualtrics©to students through their university email account. Questions included multiple choice, short-answer, text-box entry, and Likert-type scale questions.

Several of the questions included in the survey were adapted and revised from a survey by Zizzi et al. (2004), “Assessing the Impact of New Student Recreation Centers.” This study combined user and non-user surveys developed by Zizzi et al. (2004), into one 26-item online questionnaire.

For this research, a pilot study was conducted to ensure validity and reliability of the self-developed questionnaire used for data collection within the study. A Cronbach’s Alpha coefficient calculated for the 48 variables was .879, respectively. A Cronbach’s Alpha coefficient is used to measure internal consistency or reliability, and the minimally acceptable objectivity is .70 (Baumgartner & Hensley, 2006, p. 330). The closer the value is to 1.00 the greater the reliability. The results of the data analysis indicated that the variables had strong internal validity. Question 11 of the survey was not included in the Cronbach’s Alpha analysis because of the insufficient number of variables reported.

In addition, the questions were analyzed by a panel of experts within the Health and Physical Education Department at the institution, who had significant backgrounds in health and promotion, sport management, and exercise science.

Surveys are frequently used in the sport industry because of their efficiency and effectiveness. The advantages of electronic surveys include economic feasibility, timely distribution, and a quicker response rate. Electronic surveys can be just as effective as mailed surveys (Andrews, Nonnecke, & Preece, 2003; Taylor, 2000; Yun & Trumbo, 2000). According to Andrews, et al. (2000), it is not uncommon when receiving electronic responses to get a response rate of 20% or lower. This response rate is actually considered to be significant for online responses. The survey was designed to assess the rationale behind student participation in university fitness and recreation centers. Demographic factors such as age, gender, ethnicity, status at institution, athlete or non-athlete, and grade point average were included. This survey was submitted to both departmental Health and Physical Education and university wide Institutional Review Board for human subject approval.

Procedure and Design Analysis

Patterns of usage and non-usage of campus recreational facilities were assessed using the 26-item adapted online questionnaire. It was explained to the subjects that their participation in the survey and research was voluntary and that all information would be kept completely anonymous by the researcher.

The survey was distributed through the Qualtrics program on March 15, 2011, and the timetable for data collection lasted for 5 weeks. The software distributed the survey to a random sample of 1,100 students within the entire undergraduate population. The panel was randomly constructed by the applied research laboratory. Once the panel was created, the researcher began to send initial emails to the students, which included a brief introductory statement of purpose and a link to the survey included within the email. The students had 5 weeks to complete the survey.

During week two, a follow-up email was sent reminding students who had not yet participated that the opportunity was still available. A third follow-up email was sent on week three and week four. Within the follow-up emails, a brief introduction described the study and informed the students who had not participated that the questionnaire was still available. Consent was implied if students opted to take the survey. After the five-week period, the survey deactivated and was no longer accessible to the students.

The statistical association between motivation and participation was tested using ChiSquare, correlation, and frequencies method of data analyses. Motivation in relation to living arrangements and usage of the campus recreational facilities was tested using a One-way Analysis of Variance (ANOVA). All variables were tested using the Statistical Package for the Social Sciences (SPSS) Version 19 software.

Data and Analysis

The purpose of this study was to investigate usage patterns of campus fitness and recreation centers by students on college campuses. The following questions were addressed:

- 1.) What are the factors that influence fitness and recreation center participation?
- 2.) Do specific demographic factors such as gender, ethnicity, alcohol and tobacco consumption have an effect on fitness and recreation center participation?
- 3.) What are the primary factors that contribute to male and female non-usage in college fitness and recreation centers?
- 4.) What are the primary factors behind male and female motivation to use college fitness and recreation centers?
- 5.) Does motivation in relation to on-campus, off-campus, and commuter living situations have an effect on the usage of fitness and recreation centers?

Response Rate

1,100 male and female undergraduate students at Indiana University of Pennsylvania were emailed the questionnaire used in this study. There were 186 responses recorded in Qualtrics as completing the survey in its entirety for a response rate of 16.9%. The 95% confidence interval for a true response rate is between 14.7% and 19.1%.

Results

The first part of the questionnaire consisted of demographic information of the respondents and also addressed living situation, alcohol use, use of tobacco, grade point average, involvement in extra-curricular activities, and if the respondent uses or does not use the recreational facilities provided to them on campus.

Demographics

Of the students that participated, 53.2% were females and 22.6% were males (99 females, 42 males). There were 45 respondents that did not specify either male or female (24.2%).

There were 76% of females and 83% of males who reported being recreational facility users. Overall, 77.6% of the respondents were users, and 22.4% were non-users. The most represented ethnicity of the respondents was Caucasian (88%) with the next most represented ethnicity being African American (5.7%). Table one displays the respondents' year in college, which is distributed fairly evenly across the different grade levels.

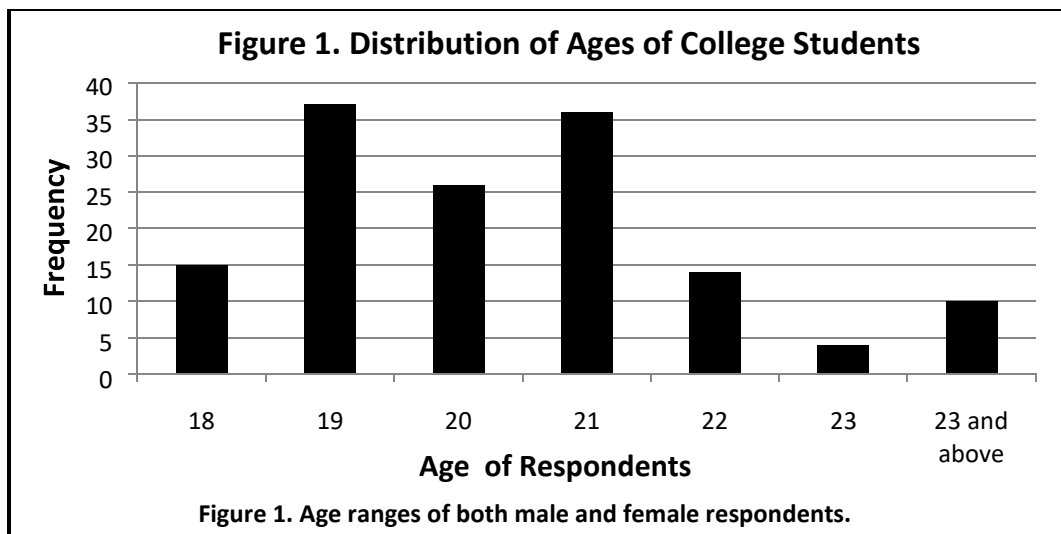
Table 1: Year in College of Respondents

Year in College	Frequency	Percent
Freshman	45	24.2
Sophomore	29	15.6
Junior	34	18.3
Senior	34	18.3

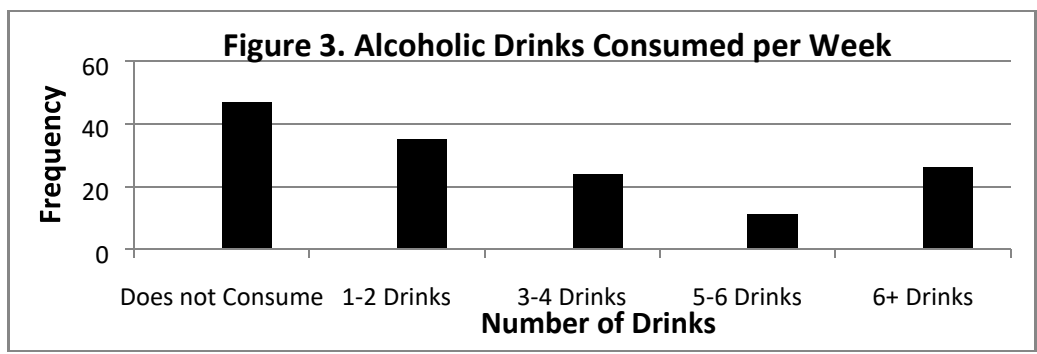
No Response	44	23.7
Total	186	100.0

Note: Table 1 illustrates respondents’ year in college, number of variables represented, and percentage from the entire sample of students.

Figure one displays the age of the respondents with a majority of both males and females being age 21 and below.



In regards to living situation, 93% of students reported living either on-campus, or off-campus within one mile of the university. In regards to tobacco use and alcohol consumption, 81.7% of the respondents reported that they never use any form of tobacco. Figure 3 illustrates the distribution of alcohol consumption on a weekly basis reported by the respondents. Thirty-three percent (N= 47) reported that they do not consume alcohol and 26% (N= 37) reported drinking more than five drinks per week.



The second portion of the questionnaire assessed factors related to users and nonusers. When respondents were asked if they used the recreational facilities provided to them on campus, 77.6% reported that they do use the facilities, and 22.4% reported not using the facilities as illustrated in Figure 4.

Usage

In determining the factors that influence fitness and recreation center participation, including demographic factors, a non-parametric chi-square goodness of fit test was calculated comparing the frequency of occurrence of each variable that influenced fitness and recreation center usage. It was hypothesized that gender, year in college, ethnicity, living situation, having health concerns, who the respondents attend the facilities with, and means of transportation would all be significant factors in determining fitness and recreation center participation.

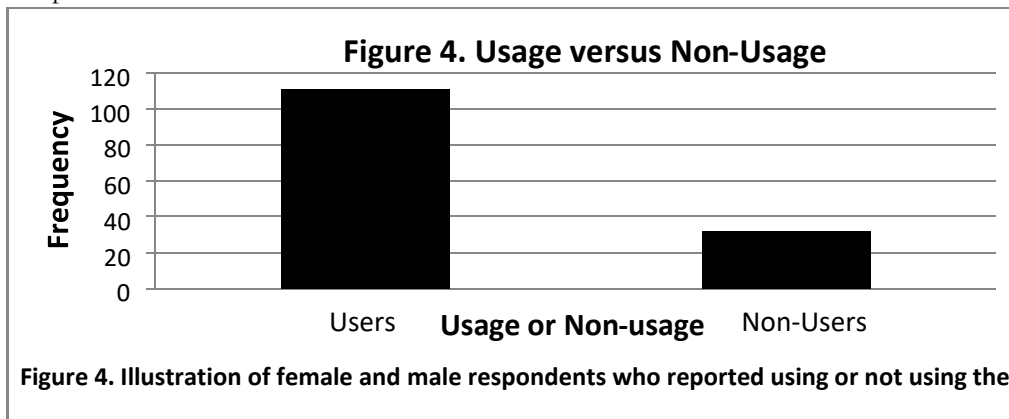


Figure 4. Illustration of female and male respondents who reported using or not using the

Several variables were found to be statistically significant in influencing fitness and recreation center participation. All of these variables were significant at the $p < .01$ level. The following variables were found to be statistically significant factors that influenced fitness and recreation center participation:

Who students attend the facilities with (sometimes by themselves and sometimes with friends); means of transportation the respondents primarily use to get to the facilities (mainly walking); gender; ethnicity; age; living arrangement in proximity to the recreational facilities; extra-curricular activities; time of day (most often in evening hours); how often respondents used the facility within the last month; length of time spent at the facility; tobacco use; and alcohol consumption.

The different types of activities that the respondents said they performed while at the fitness and recreational facilities was also a statistically significant factor that influenced usage at the $p < .001$ level. Specific time of day that students choose to attend the fitness and recreation centers is a statistically significant factor that influences usage with 60% of respondents reporting they would use the facilities between 6pm and 10pm. The primary activities students engage in at these facilities are cardiovascular and resistance training. Year in college was not a significant factor in influencing usage, $p < .277$. Table two and Figures five through nine provide information on factors that affect fitness and recreation center usage. From the information illustrated within the following figures the researcher can suggest that since a large majority of participants responded that they indeed use the facility,

Table 2: Chi-Square Results of Factors that Influence Usage

<u>Variable</u>	<u>df</u>	<u>X²</u>	<u>P Value</u>
Time of Day	2	10.400	.006
Health Concerns	3	54.750	.000
Transportation	3	205.333	.000

Who Respondents Attend With	3	30.741	.000
Gender	1	23.043	.000
Ethnicity	4	407.759	.000
Age	6	49.169	.000
Living Situation	2	46.420	.000
Extra-Curricular Activities	5	147.183	.000
Tobacco Use	3	245.887	.000
Alcohol Consumption	4	25.077	.000
Attended Within the Last Month	4	20.056	.000
Length of Time at Facility	6	47.868	.000

Note: Table 2 illustrates the specific variable that influences usage. Df= Degrees of freedom, X^2 = chi-square value, $*P>.01$ several trends become apparent. Users of the fitness and recreation centers are more likely not to have any health concerns. They spend about 45 minutes to 1 hour at the facility where they mainly perform cardio and resistance training, and their primary means of transportation to the facilities is walking.

Figure 5. Reported Health Concerns

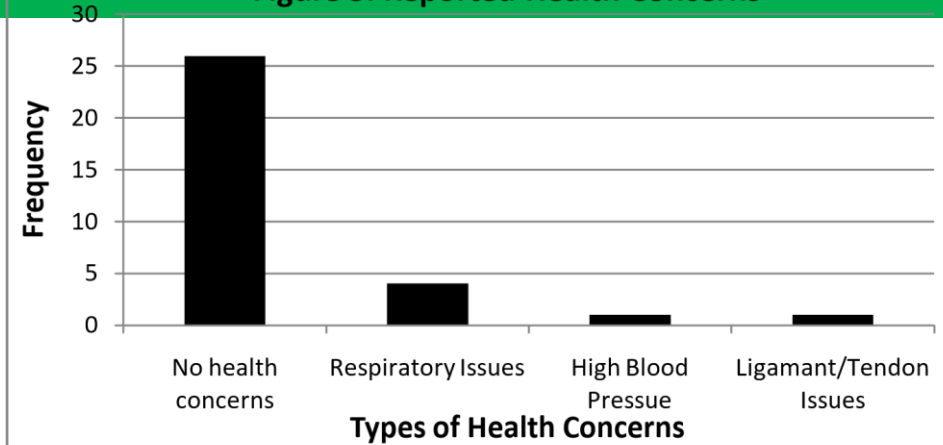


Figure 5. Distribution of reported health concerns of male and female respondents.

Figure 6. How Long Respondents Spend at the Facilities

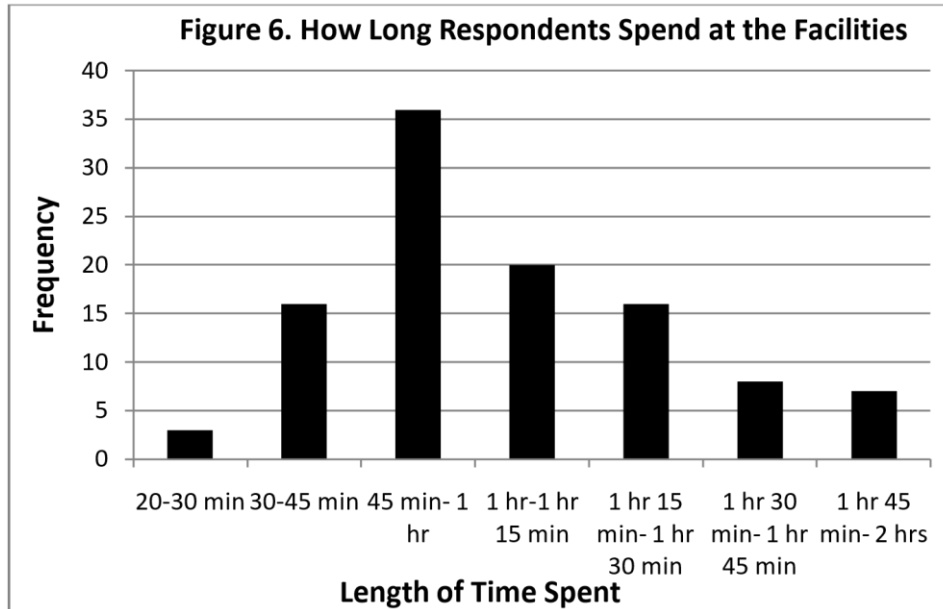


Figure 6. Distribution of time respondents reported spending at the facility when they attend.

Figure 7. Cardiovascular Activity Performed at the Facilities

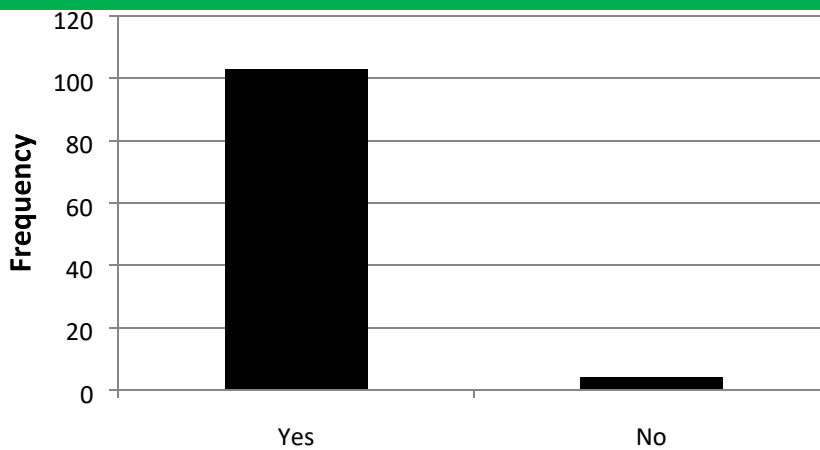


Figure 7. Illustration of respondents who reported cardiovascular activity as the primary activity they perform while at the recreational facilities.

Figure 8. Resistance Training Performed at Facilities

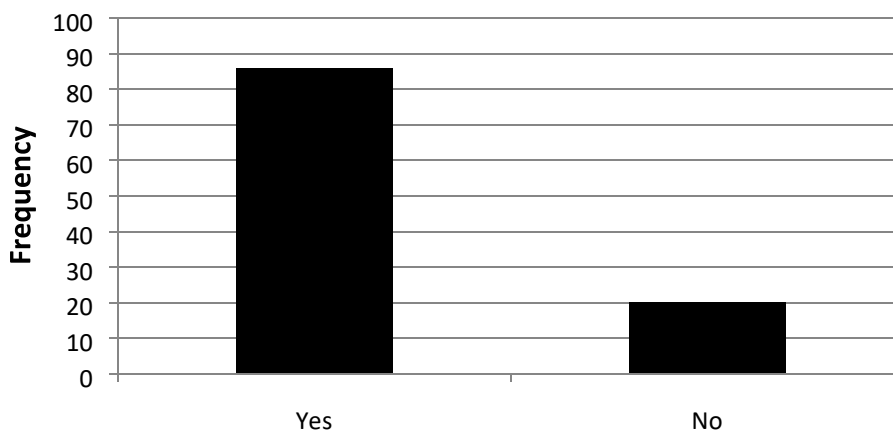
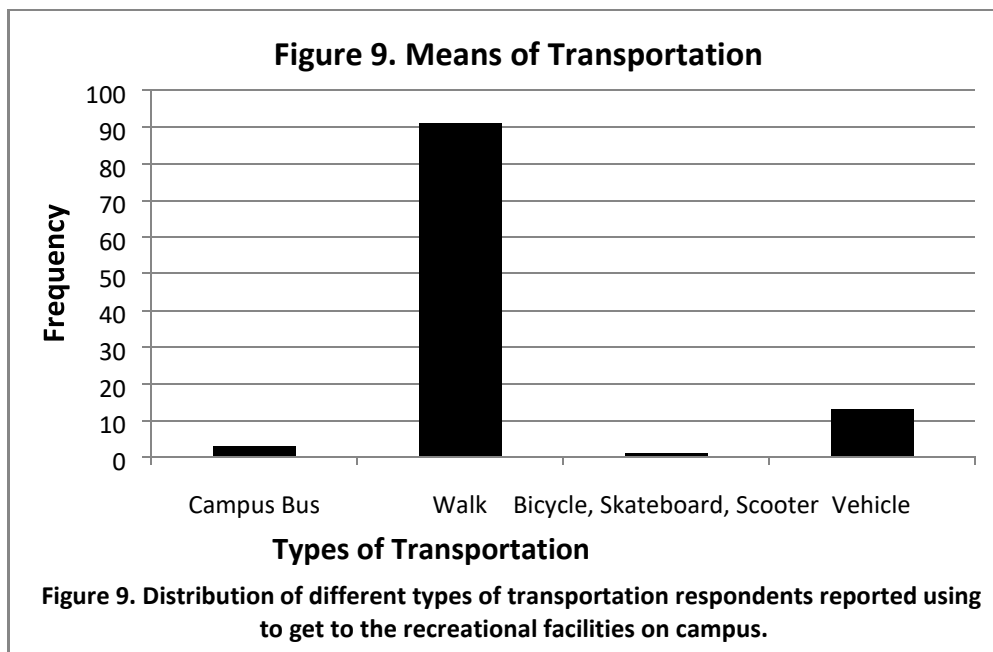


Figure 8. Results of respondents whose primary activity performed at the recreational facilities is resistance training.



Non-Usage

When conducting a Pearson chi-square test for independence, the researcher observed factors related to male and female non-usage. Thirty-one out of 186 respondents reported factors that attributed to their non-usage. A chi-square test of independence was calculated comparing factors related to non-usage. The only statistically significant relation found ($\chi^2(4) = 10.571, p < .032$) between male and female non-usage was the location of the facilities being too far away from the respondents' living arrangement. The researcher can suggest that proximity of the recreational facility to the student's living arrangement can have an adverse effect on the participation of that individual.

A chi-square test of independence was also calculated comparing factors related to reasons for usage. A Pearson chi-square correlation was calculated showing a statistically significant relation ($\chi^2(4) = 21.046, p < .000$) between male and female usage and maintaining their weight as a motivational factor to use the facilities. A statistically significant relation was also found between male and female usage and losing weight as a factor in their usage ($\chi^2(4) = 19.234, p < .001$). Increasing self-esteem, overall health and fitness, stress relief, and prevention of health problems were not significant factors in respondents' motivation to use the recreational facilities. Users also reported factors that influenced their occasional nonusage. A chi-square test of independence was also calculated comparing male and female occasional non-usage. A Pearson chi-square correlation revealed that a statistically significant relation was found between male and female occasional non-usage and lack of time as a motivational factor ($\chi^2(4) = 13.252, P < .010$).

A statistically significant relation was also found between male and female occasional usage and lack of energy as a contributing factor ($\chi^2(4) = 11.147, p < .025$), as well as too much schoolwork ($\chi^2(3) = 10.109, p < .018$),

inadequate facility operational hours suitable to the respondents’ schedule ($\chi^2 (4) = 10.071, p < .039$), and respondents’ hesitancy to want to invest financially in classes offered at the facilities ($\chi^2 (4) = 21.494, p < .000$).

A Pearson chi-square correlation was calculated comparing the benefits experienced by male and female users. Data revealed that both males and females reported perceived strength gains as a benefit of usage ($\chi^2 (2) = 6.140, p < .046$). This was the only statistically significant variable found in relation to benefits experienced from using the recreational facilities.

A one-way ANOVA (Analysis of Variance) was calculated comparing the location of the respondents’ living arrangement (on-campus, off-campus, and commuter) and its influence on their usage of the recreational facilities on campus.

For the first question within Table 3, minimum and maximum values one through five represent choices on the questionnaire: 1 = never, 2 = 1-5 times, 3 = 5-10 times, 4 = 10-20 times, and 5 = 20-30 times. There were 108 respondents who answered the question, 103 of them live either on-campus or off-campus within one mile of the university. The respondents reported using the facility between five and 20 times within the last month. The mean for on-campus was $m = 3.97$ and the mean for off-campus within one mile was $m = 3.71$. For the second question, minimum and maximum values two through seven represent successively greater lengths of time

Table 3: Living Arrangement and Influence on Usage
How often has the respondent used the facilities within the last month?

N	Mean	Std. Deviation	Std. Error	Min.	Max.
On-Campus	58	3.97	1.633	.214	1 5
Off-Campus, Within 1 Mile	45	3.71	1.590	.237	1 5
Off-Campus, Greater than 1 Mile	5	3.60	1.673	.748	2 5
TOTAL	108	3.84	1.607	.155	1 5

How long does the respondent spend at the facilities?

N	Mean	Std. Deviation	Std. Error	Min.	Max.
On-Campus	58	4.90	1.495	.196	2 7
Off-Campus, Within 1 Mile	43	4.53	1.453	.222	2 7
Off-Campus, Greater than 1 Mile	5	5.40	1.673	.748	4 7
TOTAL	106	4.77	1.488	.145	2 7

Note: N= number of respondents, Std. deviation = standard deviation from the mean, Std. error = standard error of the mean, Min = minimum value respondents chose on the question, Max = max value respondents chose on questionnaire. That student spends at the recreational facilities. Respondents who live on-campus or off-campus within one mile reported spending between one hour to one and one half hours at the facilities. Respondents who live off-campus greater than one mile reported spending between one and one quarter hours to one and three quarter hours at the facilities.

No statistically significant difference was found ($F(2,105) = .373, p > .05$), ($F(2,103) = 1.198, p > .05$) between both variables (how often have respondents' used the recreational facilities provided to them within the last month, and how long do they spend at the recreation center when they are there) and their living arrangement while attending college.

Respondents were also asked their opinion on how college and university directors and administrators can recruit more students to take advantage of the facilities, what they believe prevents students from using the facilities on campus, and their overall opinion on the facilities and programs located on their campus. Using a Pearson chi-square test for independence, the researcher found that to recruit more students to use the facilities, respondents said that fitness and recreation center managers should offer promotional deals such as a percentage off of a user's membership if he or she gets a friend to join ($\chi^2(4) = 12.159, p < .016$) as well as having personal trainers available ($\chi^2(4) = 10.857, P < .028$).

Table 4: ANOVA Results

How often has the respondent used the facilities within the last month?

Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2	1.949	.974	.373 .690
Within Groups	105	274.375	2.613	
TOTAL	107	276.324		

How long does the respondent spend at the facilities?

Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2	5.289	2.645	1.198 .306
Within Groups	103	227.277	2.207	
TOTAL	105	232.566		

Note: Analysis of variance of variables associated with how often respondents use the facilities. Df = degrees of freedom, F = ratio of explained to unexplained variance, Sig. = Significance level.

A chi-square was also calculated when analyzing what the respondents' felt was the reason behind students' non-usage on campus. A Pearson chi-square test for independence revealed that respondents believed that being too lazy was a statistically significant factor related to student non-usage ($\chi^2(4) = 13.318, P < .010$) as well as not knowing how to properly use the machines in the facilities ($\chi^2(4) = 9.630, p < .047$).

Even though a vast majority of the participants reported being users of the campus recreational facilities, a significant number of students stated that they would still attend a university even if it did not provide them with a campus fitness and/or recreation center ($\chi^2(4) = 10.395, p < .034$). When asked if the student fitness and/or recreation centers on campus were a factor in their decision to attend the university, 86 out of 108 (79.6%) respondents stated that the facilities were ultimately not a factor in their decision to attend the university.

Summary, Conclusion and Future Directions

Findings from this research suggest that there are specific factors that significantly influence fitness and recreation center participation by students on college campuses.

According to the data obtained from this research, males are more likely to use their recreational facilities on campus than females, and there are an overwhelmingly larger number of users as opposed to non-users. However, as the research has shown, students still are not exercising as much as they should be. Approximately 87.9% of respondents were Caucasian, so this data cannot be generalized to represent all ethnicities and races of college students as a whole. However, this did represent well over three quarters of the ethnicities at the institution as a university with 11,746 being Caucasian out of a total 12,827 undergraduate students. Comparisons should only be made to institutions with similar recreational opportunities and facilities with students of a much similar demographic.

Further research in the area of fitness and recreation center usage should look at the college population as a whole and over time, perhaps a longitudinal study across the students' entire collegiate career. Most students reported living either on-campus or off-campus within one mile of the university. The data from this research is fairly consistent with results from prior studies (Watson et al., [2006]; Zizzi et al., [2004]; Miller et al., [2008]). We can suggest that users are more likely to be male, Caucasian, non-smokers, live on-campus or off-campus within a mile of the college or university, age 21 and under, not involved in any type of extracurricular activity, and have no health concerns. Users' primary means of transportation to the recreational facilities on-campus is walking, and the main activities they perform at the facilities are resistance training and cardiovascular training. Factors related to motivation to use include maintaining and losing weight. The most statistically significant factor related to benefits from usage was reported to be perceived strength gains. Factors related to occasional non-usage within the user population included lack of time within the respondents' schedule to allot to utilizing the fitness and recreational facilities, lack of energy, too much schoolwork, and inadequate operational hours that do not suit the respondent's schedule.

The most statistically significant factor found to influence non-usage was living arrangement and how far in comparison the respondent was located to the recreational facilities. The farther away the respondent lived from the facilities, the less likely they were to attend. The data showed that females were less likely to use the fitness and recreational facilities as opposed to their male counterparts. When asked what universities can do to increase student recruitment and retention efforts of the fitness and recreational facilities on campus, respondents stated that offering promotional deals such as discounts off of membership prices and having certified personal trainers available would assist in providing incentives for students to participate.

Although a large majority of the respondents were users, a significant number of students reported that they would still attend a university that did not provide them adequate recreational facilities.

Future Directions

Further research is necessary to evaluate the importance of campus fitness and recreation centers. Understanding factors related to usage and the patterns of use within each student demographic will be paramount in understanding how to target different populations to successfully increase physical activity through fitness and recreation center participation. The main demographic that colleges and universities should focus on targeting is the female population, students age 21 and above, as well as different minority races and ethnicities. It would be beneficial for future research to focus solely on non-user demographic groups assessing their rationale for non-usage. If colleges and universities can successfully implement an initiative such as an incentive program to increase participation, students may be more inclined to use the facilities because of the idea of positive reinforcement.

Understanding perceived barriers to participation such as proximity to the facility, lack of time, and inadequate operational hours can assist university administrators and fitness and recreational facility directors in reevaluating their efforts to better accommodate the college population to help ensure overall student success and well-being.

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