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Original Article

College undergraduate students' self-rating of their physical activity involvement over a 7-day period

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Abstract:
Purpose: To establish the college undergraduate students' self-rated physical activity involvement over a 7-day period.
Methodology: The study utilized the survey method using the International Physical Activity Short Version of the Questionnaire (IPAQ). The purpose of the questionnaires is to provide a common instrument that can be used to obtain internationally comparable data on health-related physical activity. The study was undertaken at a medium sized campus in the South Western part of U.S.A., with respondents drawn from the College of Nursing and Health Sciences.
Results: A total of 220 students responded to the questionnaire. Most of the respondents, 182 (82.73%) commuted to campus; most, 128 (58.18%) were aged between 21 and 30; and the majority, 137 (62.27%) were females, 9 (4.09%) were freshmen, 39 (17.73%) sophomores, 114 (51.82%) juniors and 58 (26.36%) senior undergraduate students. Regarding the frequency of engaging in vigorous physical activity, the study established that 75 (34.09%) students did it less than two times a week, with 19 (8.64%) of them reporting zero involvement, 107 (48.64%) did between 3 to 5 days and 38 (17.27%) did it almost daily ie. more than six times a week. Regarding participation in moderate physical activity, 89 (40.45%) reported only for less than two days with 13 (5.91%) indicating zero participation; 96 (43.64%) reported participation between 3 to 5 days; and 35 (15.91%) did for more than six days a week. Students were also asked to indicate the number of days they managed to walk for at least 10 minutes at a time, and 47 (21.36%) indicated less than two times with 19 (8.64%) indicating no time at all; 66 (30%) indicated 3 to 5 days and 107 (48.64%) indicated doing it more than six times a week.
Conclusions: Overall, the majority of the respondents regularly engaged in walking, moderate and vigorous physical activity on most days of the week. One limitation of this study is the fact that the data was self-reported by the participants. Self-reporting could entail either under-reporting or exaggerating. Additionally, there is need to study a more diverse student population drawn from multiple institutions and where possible drawn from different states and countries.
Key words*:* physical activity, vigorous, medium, walking, medium sized campus, college students

Introduction

Recent evidence shows that more than 35 percent of adults across the USA are considered obese, with a BMI greater than or equal to 30 (AHA, 2012; Ogden, et al., 2010, 2012). This percentage has been increasing at significant levels over the last 15 years (Ferrara, 2009; Huang et al., 2003; King et al., 2014; Ogden et al. 2012). According to Hutchins, Drolet and Ogletree (2010), this increase in overweight and obesity levels has become an epidemic. A number of researchers argue that physical inactivity has become one of the most relevant public health issues in the U.S.A. (Chiang et al., 2013; Sallis et al., 1998). Even more disturbing is the fact that the number of children who are overweight or obese is also increasing at an alarming rate, with more than 17% of children in the U.S.A. being overweight or obese, and even higher percentages among African American and Hispanic children (Ferrara, 2009). It is noteworthy that the prevalence of obesity was higher among adolescents than among preschool-aged children pointing out the need for proper child upbringing if the trends are to be slowed down and even reversed. The prevalence of obesity was higher among boys than girls (18.6% of boys and 15.0% of girls were obese) (Ogden et al. 2012). At college level, Ferrara, Nobrega and Dulfan (2013) report that 30 – 35% of the students are obese or overweight, with much of it attributed to physical inactivity.

It is apparent that the academic environment of physical activity at college level is voluntary. This freedom of choice, to be active or not, could be a major factor in the decline in students' physical activity level (Sigmundova et al., 2013). Cross-sectional studies also show that participation in exercise decreases significantly between adolescence and adulthood. This significant decrease in physical activity reflects the transition in the lives of students from high school to college. Indeed college represents a major stepping stone towards

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independence for a number of students. The transition from high school to college is therefore a critical period for the development of a healthy lifestyle (Chiang, Zhang and Casebolt, 2013; Dinger, Brittain and Hutchinson, 2014; King et al., 2014; Wetter et al., 2013; Sigmundova et al., 2013). According to Nahas, Goldfine, & Collins (2003), habitual participation in physical education programs is crucial in order for students to enjoy a healthy and active lifestyle in college level. Results from the Behavioral Risk Factor Surveillance Survey report by the Centers for Disease Control and Prevention (2014) suggest that the greatest increases in obesity occur in individuals between the ages of 18 to 29 years. This is a period of transition from adolescence to adulthood and also college going phase of life (Dinger, Brittain and Hutchinson, 2014) where they are deemed to gain weight and body fat throughout their college years (King et al., 2014; Wetter et al., 2013). College years are a time when a combination of popular culture, newfound freedom, peer pressure and a search for independence bombard a student leading to unhealthy choices (NASPE, 2007). Some of the factors that have been associated with weight gain for college-going young adults include physical inactivity, poor dietary choices, increased caloric intake, increased stress and disturbed sleep patterns (Ferrara 2009; Serlachius, Hamer and Wardle, 2007; Patel and Hu, 2008). Some of the negative consequences of increased body weight among young adults are the development of the metabolic syndrome including impaired glucose tolerance, insulin resistance, hyperlipidemia, elevated blood pressure, and increased abdominal fat (Ferrara, 2009). It is therefore of paramount importance to establish the life-style physical activity patterns of college students. Knowledge of the physical activity patterns would help address their needs and therefore devise strategies for intervention. College is also an ideal place to promote Physical activity among students who are young adults. At college level, should have the opportunity to socialize and interact via athletics, intramural and extramural activities, and other recreational activities that are physical in orientation. This is important because college students' activity patterns mirror that of society's progressive decline in physical activity as it is known that the most rapid decline in physical activity happens during late adolescence and early adulthood (King et al., 2014; NASPE, 2007). Additionally, knowing their pattern would help compare with the physical activity patterns for other college students or young adults around the world. This study is aimed at establishing the college undergraduate students' self-rating of their physical activity involvement over a 7 day period at a medium sized campus in South Western United States of America.

The specific objectives of this study were: establish the demographic details of the respondents, assess their self- perception of their level of physical activity participation on a weekly basis in terms of the frequency of participation in vigorous, moderate and walking and make recommendations.

Material & methods

The study utilized the survey method using the International Physical Activity Short Version of the Questionnaire (IPAQ, 2002). The purpose of the questionnaire is to provide a common instrument that can be used to obtain internationally comparable data on health-related physical activity. The development of an international measure for physical activity commenced in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken in 12 countries (14 sites) across 6 continents during 2000. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages. IPAQ is suitable for use in regional, national and international monitoring and surveillance systems and for use in research projects and public health program planning and evaluation.

The study used undergraduate college students drawn from a medium sized public university in the South Western region of the United States of America registered in the fall semester of 2014. The survey was carried between the 5th and 10th week of the semester to allow them to settle down in the rhythm of college life while at the same time not too close to the end of the semester when the pressure of examinations is at its peak. An informed consent was sought from all the participants as per the provisions in the University's Institutional Review Board before the students responding to the survey items. Each responding student was asked to think about all the vigorous and moderate activities that he (she) did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make he (she) breathes much harder than normal. Moderate activities refer to activities that take moderate physical effort and make he (she) breathes somewhat harder than normal. The data derived from the study was descriptively presented via a table and figures.

Results

A total of 220 students responded to the questionnaire as shown in Table 1.

Table 1: Summary of the demographic details of the respondents (N = 220)

Attribute	*Number*	*Percent of total*
Sex		
Males	83	37.73
Females	137	62.27
Age		
Below 20	62	28.18
21 – 30	128	58.18

31 – 40	21	9.55
Above 41	9	4.09
Residence		
On campus	38	17.27
off Campus	182	82.73
Weight		
Below 125	30	13.64
126 - 150	64	29.09
151 - 175	56	25.45
176 - 200	35	15.91
201 - 225	27	12.27
Over 226	8	3.64
Year in school		
Freshman	9	4.09
Sophomore	39	17.73
Junior	114	51.82
Senior	58	26.36
Major		
Kinesiology	98	44.55
Health and Kinesiology	25	11.36
Nursing	90	40.91
Others	7	3.18

Demographic characteristics

Table 1 shows that most of the respondents, 182 (82.73%) commuted to campus; most, 128 (58.18%) were aged between 21 and 30; and the majority, 137 (62.27%) were females, 9 (4.09%) were freshmen, 39 (17.73%) sophomores, 114 (51.82%) juniors and 58 (26.36%) senior undergraduate students.

Participation in vigorous physical activity

Regarding the frequency of engaging in vigorous physical activity, the study established that 75 (34.09%) students did it less than two times a week, with 19 (8.64%) of them reporting zero involvement, 107 (48.64%) did between 3 to 5 days and 38 (17.27%) did it almost daily i.e. more than six times a week as shown in fig 1.

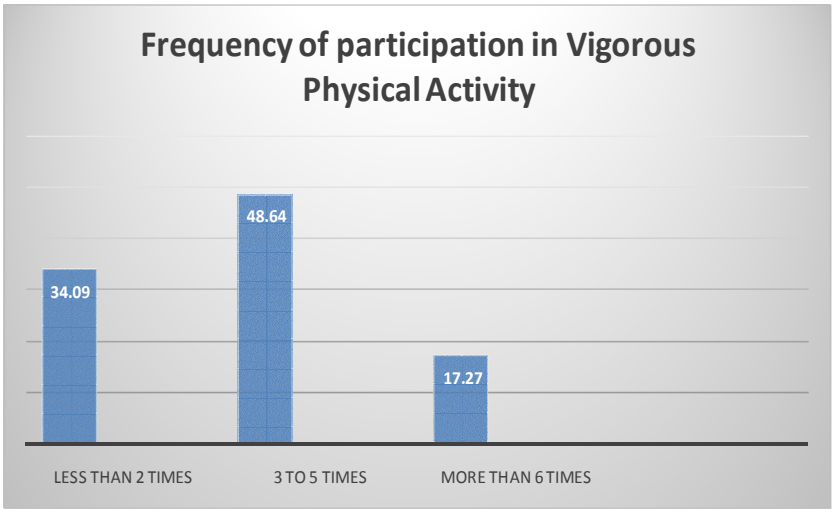

Fig. 1. Participation in Vigorous Physical Activity over 7 days.

Participation in moderate physical activity

Regarding participation in moderate physical activity, 89 (40.45%) reported only for less than two days with 13 (5.91%) indicating zero participation; 96 (43.64%) reported participation between 3 to 5 days; and 35 (15.91%) did for more than six days a week as shown in Figure 2.

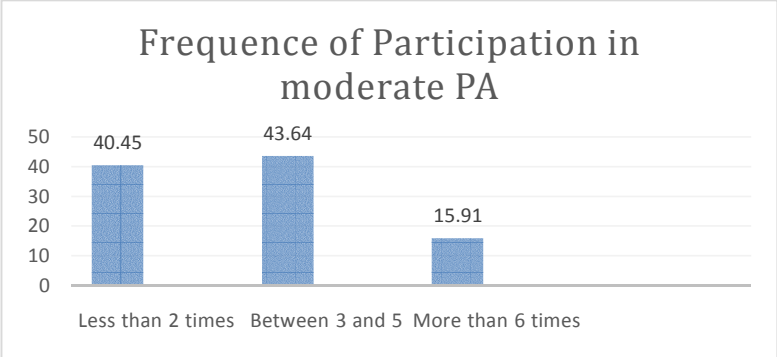

Fig. 2. Participation in Moderate Physical Activity over 7 days.

Frequency of walking

Students were also asked to indicate the number of days they managed to walk for at least 10 minutes at a time, and 47 (21.36%) indicated less than two times with 19 (8.64%) indicating no time at all; 66 (30%) indicated 3 to 5 days and 107 (48.64%) indicated doing it more than six times a week as shown in Figure 3.

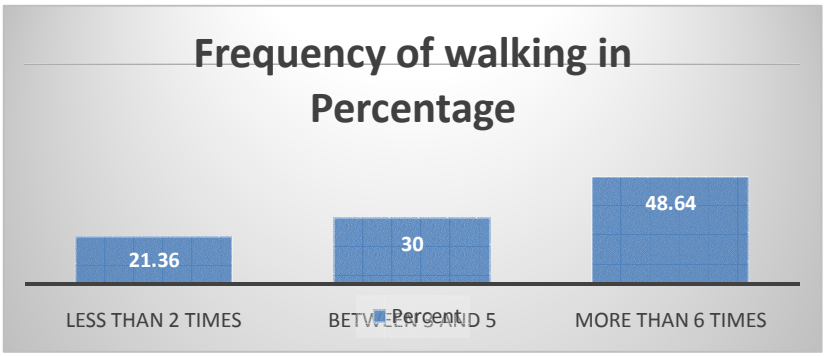

Fig. 3. Frequency of walking over a 7-day period in percentage

Discussion

Demographic characteristics

Table 1 shows that the majority of the college undergraduate students that were respondents in this study were females, 137 (62.27%); 9 (4.09%) were freshmen, 39 (17.73%) sophomores, 114 (51.82%) juniors and 58 (26.36%) seniors; most, 182 (82.73%) commuted to campus; most, 128 (58.18%) were aged between 21 and 30. Regarding the gender proportions, it is evident that female students were the majority compared to males in the study. This proportions are nevertheless very close to the overall enrollment in the university where the women made up 57.2% while the men were 42.8% in 2013 (Annual Student Report, 2014). The report also shows that the majority of students in this campus were between the age of 21 and 30, just as the findings of this study showed.

Participation in vigorous physical activity

King et al., (2014) found that 56% of college students engaged in vigorous physical activity less than twice a week. This is much higher than the 34.09% established in the present study. This difference could be due to the fact that the respondents were drawn from the health-related majors of Nursing, Health Studies and Kinesiology. These sample could be more predisposed to be physically active due to the disciplinary expectations and curriculum exposure to physical activity classes. A study by Ferrara et al. (2013), reported a lower incidence of obesity and overweight among students in health care professions. The present study found only 17.27% of the college students in the study engaged in vigorous physical activity for at least 10 minutes for more than 6 days a week, while 48.64% did for between 3 to 5 days. Cumulatively, therefore, 65.91% of the participants engaged in vigorous activities lasting more than 10 minutes more than 3 times a week. This shows, on the basis of frequency, an active lifestyle by these college students. Although the findings in the present study seem to contradict earlier research (Ferrara et al., 2013; Huang et al., 2003; Keating, Guan, Castro Pinero & Bridges, 2005; Lowry et al., 2000; Pinto, 1995; Pinto, Cherico, Szymanski & Marcus, 1998; Racette et al., 2005; Suminski, Petosa, Utter & Zhang, 2002), it is noteworthy to point out the different parameters used to assess physical activity especially with regard to duration. However, it is ideally expected that college students specializing in Health and Kinesiology as well as Nursing set a good example by practicing a healthy lifestyle. These health professionals should exercise, not only to benefit their own health but also to make their

endorsement of an active lifestyle more credible (Frank et al., 2008; Piazza et al., 2001). As practitioners, health sciences students in college should be cognizant of the fact that that they are often seen as role models and that their fitness will affect clients seeking to exercise. It is therefore imperative that their behavior pertaining to PA be in line with the high expectations which in turn impacts on their fitness to educate the clients and the public in general on the importance of leading active lifestyles.

Participation in moderate physical activity

According to the Centers for Disease Control and Prevention (CDC) (2005, 2008), adults should engage in moderate-intensity aerobic activities for at least 150 minutes every week and in muscle-strengthening activities on two or more days a week. Additional guidelines also suggest that bouts of 10-15 minute exercise sessions can be added up to meet recommended physical activity levels. The present study shows that 59.31% of the participants engaged in moderate physical activities for between 3 to 7 days in a week. Although the study did not address the length of time of each session, there is an indication that there is a regular pattern of moderate physical activity participation for this college students. However, it is still disconcerting that 40.45 percent of the students engaged in physical activity for 2 or less times a week. This is close to the self-reported assessment of physical activity among young adults which indicated that over 50% of the U.S. College students did not participate in moderate or vigorous physical activity (Wetter et al., 2013). According to Wetter et al., (2013), physical activity declines sharply from high school to the first year of college and, then, it continues to decline thereafter. Wetter et al., (2013) also raises a fundamental issue of the disparity between the self-reported trends versus the actual ones. Therefore, while self-reported activity patterns are disconcerting, more worrisome is evidence that suggests the actual physical activity levels are far lower than the self-reported levels. According to these authors, a "recent comparison of self-reported and objective assessments of physical activity among adults found that self-reported levels of moderate and vigorous activity were 4 and 7 times higher than those measured by accelerometer" (2). On the positive side, people of all ages who are generally inactive can improve their health and wellbeing, both physically and psychologically, by becoming physically active at moderate intensities on a regular basis. Relatively few Americans meet minimum recommendations and nearly one-third report no leisure-time physical activity (Centers for Disease Control and Prevention, 2014).

Frequency of walking

Walking is one of the most effective interventions for adults who desire to be physically active on a regular basis. A study by Kovacevic et al., (2015) concluded that a higher percentage of female students that walked had better health status compared to those who were inactive. The present study shows that 48.64% of the participants walked more than six times a week. While 21.36% did the walking for less than two times a week. It is very disconcerting that 19 (8.64%) student participants reported no walking at all for the entire week. This cadre of students may not be in a position where they appreciate the importance of leading a physically active lifestyle including walking.

Conclusions

Overall, the majority of the respondents regularly engaged in walking, moderate and vigorous physical activity on most days of the week. It can therefore be asserted that students from this medium college had a reasonably active lifestyle. Students who engaged in vigorous and moderate physical activity as well as walking averaged 21.85%, 40.76% and 31.97% respectively. A study by Chiang, Zhang and Casebolt (2013) also reported an active lifestyle of U.S.A. college students. They established that 54.13% of U.S.A. students reported a high level of physical activity participation. The researchers also found that 7.26% of the U.S.A. students reported low levels of physical activity, while 38.61% had moderate Physical activity levels. The high percentages (65.91%) of students in the present study who were active for more than three times a week doing vigorous physical activity; 59.55% doing moderate physical activity and 78.64% walking are indicators of active living. This could be due to the fact that most students were drawn from the departments of Kinesiology and Nursing. These groups of students could be more sensitized to the need to lead physically active lifestyles. However, it is also noteworthy that on average, 31.97% (34.09%, 40.45% and 21.36%) of the students reported that they engaged in vigorous, moderate and minimal walking for less than twice a week. Out of this 31.97%, on average 7.73% reported no physical activity at all. These findings contradict the earlier findings from the National College Health Risk Behavior survey, which reported that in the United States only 19% of American students exercised five to seven days per week and the American College of Sports Medicine (ACSM) and American Heart Association (AHA), which reported that 48.7% of college students do not meet the recommended requirement of moderate intensity exercise (ACHA, 2010). In addition, the American College Health Association, National College Health Assessment (ACHA-NCHA; n = 98,050; age x = 22.59) conducted a study across different college campuses (n=157) during the spring 2012 semester and found that only 20.8% of the students reported exercising 30 minutes per day for 5-7 days per week at a moderate intensity level of cardiovascular or aerobic exercise. Within the same cohort group, 32.6% of the students reported 20 minutes of vigorous exercise over 3-7 days of cardiovascular or aerobic exercise (ACHA-NCHA, 2012). This figure of 20.8% is very close to the 17.27% of the students who reported engaging in vigorous PA for more than 6 times

in a week in the present study. However, a combination of those who did vigorous activities for over 3 to 7 times a week rose to 59.3% which is way above the 32.6% reported in the ACHA-NCHA, (2012) study. On the whole, there are still a high number of students that are not actively engaged in vigorous PA. Minimal physical activity participation by some college students could be attributed to over-reliance on motorized transport to get to various locations of interest; centralized class locations where students do not have to walk much; and long study and work schedules. NASPE (2007) asserted that barriers that could keep one from participating in physical activity increase as grade level increases. Apparently, first-year college students have reported both intrapersonal as well as environmental/contextual barriers relative to physical activity including high academic and work-related demands at school and at their job as well as a lack of motivation (King et al., 2014; NASPE, 2007). Additional barriers could be community related such as lack of specific sports teams to join at their college or university and lack of transportation to facilities (NASPE, 2007).

Limitations and recommendations

It is noteworthy to point out that there were several limitations including the fact that the study relied on participant self-reports, recall and did not address all variables that have been linked to physical activity behaviors including the length of the PA bouts, intensity, type of activities, and the prior history of participation. Using of self-reported data could easily lead to either under-reporting or over-reporting. Additionally, the volunteer nature for participation in the study could also have appealed to those students who were already active physically. A combination of self –reporting and self-selection for an already active group may easily lead to data that is on the higher end of PA participation. The study was also done at a medium sized university in South Western United States with participants drawn from the undergraduates in the college of Nursing and Health Sciences. Given these limitations, the findings for this study may only be generalizable to other populations with caution. It is recommended that future studies focus on a more extensive and diverse sample that is representative of a particular campus and even state or nation. More research on PA behaviors among students is important as behaviors in college have a long-term impact on adult PA habits. Studies (Keating et al., 2005) show that PA patterns established in college are likely to be maintained for a long time. Indeed Gropper et al., (2012) report a trend of decline in PA and an increase in weight and body fat from freshman to senior year. These trend is carried over to post-graduation period in life. This is because most college students are adults with multiple responsibilities and therefore they are very likely to maintain PA patterns that they establish during their college years throughout adulthood, and such patterns may thereby influence long-term health (Keating et al., 2005).

However, it is imperative that college students experience physical activities that would equip them for a life time. Exposure to potentially skill building physical activities would serve them well after they leave college. It is therefore important that colleges continue to emphasize physical activity classes for all students so that they do not graduate with leisure time and physical activity skill deficits. As the fight against declining physical activity patterns in U.S.A. continue to gather steam, colleges/universities should recognize the vital role of intramural, extramural, intercollegiate and PA instructional programs in providing the young adults with knowledge and skills in physical activities that can be used in times of relaxation and as a means to shape their individuality for life.

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