

COMPARISON OF PHYSICAL ACTIVITY BEHAVIORS BETWEEN
UNIVERSITY STUDENTS AND TENNESSEE TWELFTH GRADERS

By

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I dedicate this research to my son Owen. Always remember, anything worth doing is not easy. I love you.

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ABSTRACT

The focus of this research paper was to examine the current physical activity habits and Body Mass Index (BMI) of university students in comparison to Tennessee twelfth graders. The participants consisted of 44 health and 254 activity class undergraduate students at Middle Tennessee State University located in Rutherford County, Tennessee. The Purposes for Engaging in Physical Activity Scale (PEPAS) and selected questions from the Youth Related Behavior Survey (YRBS) were used to collect data from the participants in the form of a questionnaire. One-Way Analysis of Variance (ANOVA) compared BMI to selected questions from the YRBS and the PEPAS were analyzed via Statistical Package for the Social Sciences (SPSS). Results of this study suggest that 12th graders were more active for at least 60 minutes per day and were more likely to eat vegetables. While there was no association between type of course enrolled and BMI category, there was a significant relationship between hours spent watching TV per day and BMI. There was also a significant difference in the average of number of sports played within the past 12 months among the students enrolled in classes with the soccer class having played the most sports within the past 12 months.

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Chapter 1

Introduction

Transitioning from high school to college is a difficult process. Students often get overwhelmed with what classes to take, what major to pursue, where to live, where to work, and worry if they will make friends. Unless already a high priority behavior, physical activity may be easily forgotten.

Many believe they are too busy to engage in physical activity when they enter college. Researchers Han, Dinger, Hull, Randall, Heesch, and Fields (2008) found (in reference to the first year out of high school) that “weekly time spent in moderate...vigorous...and moderate-to-vigorous physical activity...during the past year significantly declined between the senior year of high school and freshman year of college” (p. 196). The authors further comment that “fewer participants were meeting the recommendation [of physical activity] during their freshman year of college than were meeting it during their senior year of high school” (p.196).

Obesity and physical activity have become concerns in the United States and not only are children and adolescents the focus of the issue, but young adults attending universities as well. After students leave high school and move on to college, some tend to gain weight and become less active due to busy schedules, lifestyle changes, availability of equipment, or change in physical activity habits.

An Auburn University study of students' weight and body composition as well as physical activity found that "...on average, males and females exhibited significant increases in weight and body fat" during the three-year study (Gropper et al., 2012, p. 307). Often times those who were active and participated in after school activities or weight training cease to participate in such activities as they move on to higher education and this contributes to weight gain and lower physical activity levels. The Purposes for Engaging in Physical Activity Scale (PEPAS) was used in a study that reported that their "Results...indicated that a moderate relationship existed between perceived skill level and previous participation in high school sports" (Shifflett, Buliavac, Howd, O'Brien, & Seifert, 1991, p. 154). This further confirms that habits which can contribute to obesity can continue into adulthood. If they were not active in high school or were less inclined to be active, they very well may not be active in their college years.

Students who did not participate in sports or physical activity during high school may perceive exercise as always being exhaustive or painful because they do not have positive experience exercising. Bulley, Donaghy, Payne, and Mutrie (2009) found that several of their "[first year female college] participants associated exercise with pain or discomfort, and a sense of duty or obligation...Several interviewees perceived activity as being important for health and fitness, however, they associated these outcomes with vigorous exercise rather than moderate physical activity" (p. 754). Because of this, many may avoid

physical activity even though they know it is important and a key to being healthy and maintaining a healthy weight.

By avoiding physical activity and gaining weight, health risks such as high cholesterol and blood pressure, bone and joint problems, and psychological problems arise (“Shape the State,” 2012) and can cause harm in later years. These health related issues become compounded over time.

One common measure of obesity found in both the literature and the news is Body Mass Index (BMI). It is important to be aware of Body Mass Index (BMI) and how it links to the general population’s health. Body Mass Index is often used to measure body fatness and is measured by a person’s height and weight and estimates body fatness. There are four typical categories of BMI: underweight, healthy weight, overweight, and obese. Although the measure may not work accurately for all populations, it is a consistent starting point to recognize your current health status. People whose BMI measures place them into either the overweight or obese categories may justify being concerned about their health. Factors such as physical activity level and diet contribute to people’s weight.

Some contributing factors to people’s weight are high amounts of electronic media viewing time, poor eating behaviors, and lack of participation in sports. These aspects may contribute to later health concerns. When a health concern does arise that is associated with weight and physical activity, there are a number of ways to alter habits. Some suggestions are limiting electronic media

viewing time and obtaining educational materials that could be implemented which focus on the importance of physical activity. Families can also take initiative by altering their lifestyle to incorporate more time being active as a family and eating healthier.

Purpose

The purpose of this study was to compare selected college students physical activity habits and BMI with Tennessee twelfth grade students.

Hypotheses

There are three hypotheses for this study. The first research hypothesis is students who were participating in activity classes would have a lower BMI and would report being more physically active than those students enrolled in health classes.

The second research hypothesis is those who participated in K-12 sports will be more likely to have a lower BMI and be enrolled in an activity class.

And the last research hypothesis is those enrolled in an activity class will report being active more days of the week than those enrolled in health classes.

Delimitations

The delimitations for this study were focused on type of classes in which the participants were enrolled. Because physical activity and BMI were central to the study, activity courses were chosen as well as health classes. This aids in the evaluation of physical activity among those who are actively involved in physical activity and those who are learning about health and being active. The

participants were from activity courses that included soccer, weight training, personal conditioning, social dance, and tennis. The health classes were the general health class, Health 1530/1531.

Limitations

Limitations for this study were time available for the researcher to conduct the survey, and availability of classes.

Chapter 2

Review of Literature

The lack of time spent being physically active has become a national concern. University students often fear gaining weight their first year of college because of altered routines and habits. Health related risks that accompany being overweight or obese may add to already existing stress and limit being physically active even more. Body Mass Index is often used to evaluate body fat percentage, is a general indication of health, and can possibly encourage those who are in the overweight or obese categories to be more physically active. Contributing factors such as time spent watching electronic media, eating habits, and lack of physical activity could increase the risk of being overweight or obese.

University Students

Students entering college are often overwhelmed by the experience and eating habits and exercise are often two areas that are impacted from the added stress, a busy schedule, or change in sport participation. A college based study found that students feel that “the convenience, cost, lack of time due to college life, and a lack of healthy options on campus as barriers to eating healthy...” (LaCaille, et al., 2011, p. 533). Busy schedules often keep students from exercising. Between jobs, class work, and general college life, students’ free time is scarce. Nahas, Goldfine, and Collins (2003) found that “their reported lack of time is attributed to work, [and] school...” (p.48).

To counter the lack of free time, students need to implement reserved time to be active and have a positive attitude towards physical activity. Studies have

found that “participation in high school sports programs had a positive effect on students’ perceptions of their ability in future activities” (Schifflett, et al., 1991, p. 154). This suggests that if students participated in sports during high school years, they may be more comfortable or apt to participate in sports or physical activity during college years. Kamarudin and Omar-Fauzee (2007) state that “physical activity positively influences physical and psychosocial health at all stages of the life cycle and also helps enhance the quality of life for people of all ages” (p. 43). By reserving time to be active, students can improve their health and overall attitudes.

Health Related Risks

Overweight or obese adolescents experience added stress to their heart, blood vessels, and cardiovascular system. These factors can lead to a heart attack or stroke which typically takes decades to develop, but seem to be accelerated when an individual was obese in childhood, adolescence, and young adulthood (Daniels, 2006). Freedman, Mei, Srinivasan, Berenson, and Dietz (2007) found that 70% of obese youth had at least one risk factor for cardiovascular disease. High blood pressure and cholesterol are not detected without testing, but other obesity risk factors are more easily recognized. Knee, back, hip, and foot pain are a few types of issues that obese people may experience.

An obese person exerts more pressure on their lower extremities than those in their ideal weight range. “A 200 pound person puts about 600 lbs. of pressure on their knees just by walking” (Makk, 2007, p.25). With the added

pressure and stress caused by the excess weight, adolescents can unknowingly be affecting their maturation process. Excess weight on growing bones can lead to Blount disease, a bone deformity of the lower legs ("When Being Overweight is a Health Problem," 2012). This may create a viscous cycle where lack of physical activity contributes to obesity and lead to negative consequences which make it more painful to establish physical activity patterns.

Obesity not only affects the body but the mind as well. Depression is sometimes a cohabitant of obesity. Because of their size, "kids will develop poor self-esteem and accept the fact that they will be obese their entire lives, making it extremely difficult for them to change their lifestyle in later years" ("Shape the State," 2012, p.1). Adolescents' bodies experience changes and sometimes are not satisfied with their appearances. A study conducted in Turkey found that "body satisfaction had significant effects on self-esteem and depression [and] the students who were dissatisfied with their bodies had low self-esteem and were depressive" (Ozmen et al, 2007, p.83). As adolescents mature, they become more aware and concerned with their status in what is considered the social norm for height and weight.

Body Mass Index

The Centers for Disease Control and Prevention (CDC) states that "Body Mass Index (BMI) is a number calculated from a person's weight and height... [and] provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems" (CDC, 2012). This scale is the most often used and recognized by the general population. The

CDC utilizes four weight status categories that are accompanied by corresponding percentile ranges. An individual in the underweight category would rank in the less than 5th percentile for their age and gender. Healthy weight is the 5th percentile to less than the 85th percentile, while overweight is the 85th to less than the 95th percentile. Obese is the last category and is equal to or greater than the 95th percentile (CDC, 2012).

In 2011 the CDC's Youth Risk Behavior Survey for Tennessee reported that "15% [of students] were obese (students who were > 95th percentile for BMI, based on sex- and age-specific reference data from the 2000 CDC growth charts)" (CDC, 2011). Schools in Tennessee and other states are becoming more aware of students' BMI and use that data to help educate students and parents on the importance of a healthy fitness zone.

One fitness assessment tool currently used in schools was developed by The Cooper Institute in Texas. The Cooper Institute (2010) has developed new standards for BMI as part of their fitness evaluation tests called Fitnessgram. Fitnessgram's BMI groups are based on gender and age and consider normal changes during growth and maturation. The standards age range is five to seventeen years and has three zones: Healthy Fitness Zone, Needs Improvement-Some Risk, and Needs Improvement-High Risk. Zones are relatively the same for ages five to eleven when development is similar for both genders, but then have a noticeable difference after age eleven (p.39). Fitness assessment tools such as Fitnessgram can facilitate the understanding of students' fitness levels and help them improve in needed areas. Students who

are aware of their BMI categories may be more apt to seek more physical activities and may choose to register for physical activity classes when they enter college to help lower their BMI and be in the Healthy Fitness Zone.

Contributing Factors

A contributing factor to the overweight and obesity health problem is the amount of time one spends inactive. Physical activity has been replaced with watching television, playing video games, spending time on the computer, or enjoying entertainment through handheld devices such as cell phones. These types of electronic sources are commonly known as Electronic Media (Brooks-Gunn and Donahue, 2008, p. 3). According to the British Dietetic Association, “children spend two-and-a-half months on average each year staring at screens” (“Getting Fat in Screen-Time,” 2006, p.352). Two-and-a-half months is a large portion of the year viewing a screen when students’ also have school, homework, and activity time. Brooks-Gunn and Donahue (2008) write that “America’s young people spend more time using media than they do engaging in any single activity other than sleeping” (p. 3). Electronic media (EM) is consuming a large amount of adolescents’ time and is a large factor in childhood obesity. Liou, Liou, and Chang (2010) found in their study that “Time spent viewing television...using the computer, Internet surfing, or playing video games...was associated with a higher prevalence of obesity” (p. 1251). Ronspies and Messerole (2007) state “the accelerating rate of youth obesity in the U.S. indicates that this generation of children will grow into the most overweight generation of adults in U.S. history” (p. A-96). According to Granich, Rosenberg, Knuiman, and Timerio (2010), “very

few parents consider their children's screen time to be problematic or excessive" (p. 203). Studies have been conducted to help parents, teachers, and the general public be more aware of the risks of a sedentary lifestyle and excessive electronic media viewing. Many of these studies use the Body Mass Index. The CDC is a government organization that uses BMI.

An Australian study by Granich, et al. (2010) reported that "the majority of children and their parents reported that the child spent more than or equal to two hours using EM (Electronic Media) during their leisure time on a typical school (88%) and weekend (87%) day" (p. 203). Spending such an amount of a day being sedentary will obviously affect the fitness levels of adolescents. Ronspies, et al. (2007) contend that the "mean television viewing time for both genders was 2.5 hrs/day" (p. A-96).

Moon (2008) studied 35 randomly selected children to determine their electronic media viewing time on a remotely controlled timer set to go off after a given amount of time. In her results it is stated that "children in the intervention group decreased their screen time by 17 hours per week... [and] their BMIs decreased significantly and remained lower throughout the 24 month of follow-up. In contrast, children in the control group decreased their screen time by 5 hours per week, and their BMIs did not decrease significantly" (p. 37). Less known are the factors that influence a child's amount of time viewing or interacting with some kind of electronic media. By assessing time dedicated to sport involvement, work, or recreational play, it is possible to identify factors that influence time spent viewing electronic media.

Snack and fast foods are another component that can affect weight.

Young adults are more likely to snack while watching television or taking part in another type of electronic media entertainment. According to *Screen Digest* (2006), “snacking excessively...has been shown to lower metabolic rates of children below any other waking activity” (p. 352). Adolescents tend to snack while they are playing video games and often cannot recall the amount of a snack they have consumed which may contribute to a decrease in healthiness and an increase in weight gain (Cessna, Raudenbush, Reed, & Hunker, 2007).

In a clinical study pertaining to activity promoting video games, Radon, Fürbeck, Thomas, Siegfried, Nowak, and Kries (2010) found that “ ‘apvg’ [activity promoting video games] do not increase physical activity relevantly over a longer period of time in obese adolescents...” (p. 43). The 2007 National Survey of Children’s Health (2007) asked children between the ages of six and seventeen how much time they spend, on an average weekday, watching television, watching videos, or playing video games. The results showed majority, 41.4 percent of the students, partook in some form of electronic media for more than one hour but less than four hours (“Indicator 6.10,” 2007). Those one to four hours are likely after school, but before bedtime and are spent in front of a computer or television and accompanied with a snack. In reference to young children, Brown, Nicholson, Broom, and Bittman (2009) determined that “more than a third (39%) consumed two or more servings of any of the three snack foods considered (chips, biscuits, or soft drinks). Some 18% of these children were classified as overweight or obese” (p. 223). A Taiwanese study had similar

results where they were following recommended weight margins and used Body Mass Index to determine category of weight. Chang and Nayga (2009) administered a survey to evaluate what types of foods the students ate and the amount of television viewed. The students consumed in greater quantity French fries, pizza, hamburgers, and sodas. They found that “it appears that children’s BMIs are positively associated with TV viewing hours and fast-food consumption. In addition, these two activities seem to increase the risk of being overweight and obese” (p. 295). See Table 5 for comparison among the 2011 YRBS results of 12th graders and this study’s results for selected YRBS questions.

It is hypothesized that when controlling for gender, type of course enrolled, time spent viewing television or electronic media, participation in K-12 sports, and current time spent exercising, it is predicted that students who are participating in activity classes will have lower BMIs than those students who are only enrolled in health classes. This study evaluated the physical activity habits of university students by classes enrolled and BMIs.

Chapter 3

Methods

Participants

Participants were undergraduate students attending Middle Tennessee State University (MTSU) enrolled in either HLTH 1530/1 Health and Wellness/Lab or an activity class as part of the University Basic Activity Program. The health classes and activity classes were chosen as the target population for a few reasons. The first reason is because they are undergraduate students and are more likely to have just graduated high school. This is important because the study is evaluating how students' physical activity behaviors change from high school and transitioning into college. Table 1 shows health and activity class participation by classification for this study. It is important to note that HLTH 1530/1 fulfills a general education requirement as a social behavioral science and typically occurs in the first two years of most programs. The health class discusses the importance of health and wellness in one's life and in society. The lecture section focuses on concepts, information, and data pertaining to health and wellness. The lab section evaluates lifestyles, decision-making, and data on health and wellness (HLTH, 2013). However, activity classes can be utilized at any time as electives. (See Table 1).

Table 1

Descriptives of Type of Course by Classification

Type of course	Classification				Total
	Freshman	Sophomore	Junior	Senior	
Health	34	5	5	0	44
Activity	32	63	71	88	254
Total	66	68	76	88	298

The second reason is because health classes are geared towards gaining knowledge about health and being healthy but are sedentary while activity classes are active during class and are practicing physical activity. For this study there were 298 participants. See Table 2 for survey participation by class and gender.

Table 2

Survey Participation by Class and Gender

Class	Male	Female	Total
Health	19	25	44
Personal conditioning	14	32	46
Soccer	29	6	35
Social dance	33	63	96
Tennis	20	18	38
Weight training	33	6	39
Total	148	150	298

Survey

Each participant signed an informed consent form before the survey was administered. The activity class instructors then distributed the surveys for completion. Once the participants completed the survey, they returned it to the instructor who later submitted it to the researcher. Each set of surveys was identified by class. The survey took about ten minutes to complete. Once the participants signed the consent form and completed the survey, they were allowed to leave. Number 2 pencils were provided for participants.

Design

The dependent variable for this study was Body Mass Index (BMI). The independent variables were age, gender, eating habits, time spent viewing electronic media, participation in K-12 sports, the enrolled course, current time spent exercising, and attitudes towards physical activity. One-Way ANOVA was used to evaluate the difference in overall BMI scores across the activity and health classes. This design was to evaluate developed physical activity habits and university students' BMI by enrolled course. The (PEPAS) and selected questions from the Youth Related Behavior Survey comprised the instrument given to participants. The PEPAS was chosen because it could be administered to university students to evaluate their purposes for engaging in physical activity.

Instrumentation

Purposes for engaging in physical activity scale. Shefflitt et al. used the PEPAS at San Jose University to examine the purposes of university

students to engage in physical activity (Shifflet, et al. 1991, p. 147). The questionnaire was comprised of twenty-two physical education based questions. The participants rated each question on a Likert scale of 1(Strongly Disagree), 2 (Disagree), 3(No Opinion), 4(Agree), and 5 (Strongly Agree).

Youth risk behavior survey. The Youth Related Behavior Survey was chosen because it has questions pertaining to food choices, amount of time watching TV and playing video games, physical activity time, was easy to modify to fit this study's purpose, and it is free to access. Of the original 87 questions on the YRBS, twenty-one were used in this study. The reason these questions were selected was because of convenience, time, and simple survey administration. Weaknesses were participants' honesty and consistency.

Procedures

Submission to the Institutional Review Board (IRB) granted permission to use Middle Tennessee State University students. Health and activity class instructors were contacted to request class participation. Because the health class is large, a time and date was set for them to attend and take the survey. Once they had completed the survey, a completion slip was given to the participants which they could submit to their lab teacher. The instructors for the activity classes distributed and collected the consent form as well as the completed surveys. Completed forms were given to the researcher.

Data entry. Two-hundred and ninety-eight data forms were entered into Microsoft Excel and converted to SPSS for analysis. Data entry programs identify

entry of data that are inconsistent with related responses. Missing values are also specified and to minimize error due to missing data, data entry programs take into account skip patterns within the instruments and automatically record missing data for items that are skipped. Data entry logs will track instruments. These logs will allow tracking of the step in the data collection, data cleaning, or data entry process where each instrument is at any point in time. After data entry, quality control programs were run to check for internal consistency of related variables. Once the data is relatively clean, it is exported to SPSS for analysis. (N. L. Weatherby, Personal Communication, July 26, 2012).

Analysis. Data were entered into Microsoft Excel, then One-Way Analysis of Variance (ANOVA), Pearson R Correlation, and Crosstabulations were used to evaluate the survey questions derived from the YRBS and from the PEPAS.

Chapter 4

Results

Descriptive

A total of 292 participants submitted usable data for this study. The overall breakdown by gender was relatively equal. Participants were further grouped by the four academic classifications. The classes surveyed were general elective classes that are commonly taken by freshman but in this study the majority was seniors. (See Table 3).

Table 3

Participant Gender by Classification

CLASSIFICATION	MALE	FEMALE	TOTAL
FRESHMAN	29	37	66
SOPHOMORE	34	34	68
JUNIOR	40	36	76
SENIOR	45	43	88
Total	148	150	298

Participants' rough scores of height and weight were converted first to BMI scores. These scores were further analyzed in BMI weight status; Underweight (<18.5%), Normal (18.5-24.9%), Overweight (25-29.9%), and Obese (30% and above). These results are presented by course they selected (See Table 4).

Table 4

Total Count of Participants' BMI Categories by Class

Class	BMI CATEGORY				Total
	Underweight	Normal	Overweight	Obese	
Health	1	22	14	7	44
Personal Conditioning	1	23	14	8	46
Soccer	1	16	13	5	35
Social Dance	6	57	20	11	94
Tennis	1	16	11	9	37
Weight Training	0	18	13	5	36
Total	10	152	85	45	292

Inferential

Table 5 shows the results of the listed questions of 12th graders and MTSU students who answered these selected YRBS questions. Table shows that the 12th graders were more active for at least 60 minutes per day for 5 or more days per week and more MTSU participants reported to eat less than one vegetable per day 7 days before the survey than did the 12th graders. At least half of both groups reported to have not played on a community or school related sports team in the past 12 months.

Table 5

Tennessee Twelfth graders and MTSU participants compared

Descriptive Statistics for Selected Questions from the 2011 YRBS

Question	12 th Graders	MTSU
Active for at least 60 minutes per day for less than 5 days	58.7%	67.8%
Ate less than 1 vegetable per day 7 days before the survey	42.4%	76.8%
Did not play on a community or school related sports team in the past 12 months	54.5%	50.7%

Classification by Physical Activity

See Table 6 for descriptive statistics for BMI category by type of course.

Chi-square independence test was used to examine the association between type of course and BMI category. Alpha level was set at .05. The result indicated that there is no association between type of course and BMI category, $\chi^2 (3) = .382$, $p = .944$.

Table 6

The Results of Chi-square Independence Tests between Type of Course and BMI Category

Type of Course	BMI Category				χ^2
	Underweight	Normal	Overweight	Obese	
Health	1(0.3%)	22(7.5%)	14(4.8%)	7(2.4%)	.382
Activity	9(3.1%)	130(44.5%)	71(24.3%)	38(13%)	

Note: Total sample = 292

Correlation of Hours of Watching TV per day and BMI

Using Pearson Correlation, there was a significant relationship between hours of watching television and BMI, $r(290) = .185$, $p = .001$. There is a 3.4% of shared variance between hours of watching television and BMI. (See table 7)

Table 7

Pearson's R Correlation for Hours of Watching TV per Day and BMI

		BMI	WATCHTV
BMI	Pearson Correlation	1	^{**} .185
	Sig. (2-tailed)		.001
	N	292	292
WATCHTV	Pearson Correlation	.185 ^{**}	1
	Sig. (2-tailed)	.001	
	N	292	298

^{**}. Correlation is significant at the 0.01 level (2-tailed).

Number of Sports Played within the Past 12 Months and Enrolled Course

The One-way ANOVA was used to examine whether an average of sports played within the past 12 months is different by enrolled course. Alpha level was set at .05. The result indicated that there is a significant difference in the average of number of sports played within the past 12 months among enrolled classes, $F(5, 291) = 6.964$, $MSE = .982$, $p < .001$, $\eta^2 = .11$. The post-hoc test using Tukey's HSD comparisons indicated that the soccer group had the greatest average of number of sports played within the past 12 months of all groups. (See Table 8)

Table 8

Descriptive Statistics of Number of Sports Played within the Past 12 Months and the Results of One-way ANOVA

Group	N	Mean (SD)	F-ratio	p-value	η^2
Health	44	2.07 (.99)	6.964	< .001	.11
Personal Conditioning	46	1.67 (.94)			
Soccer	35	2.60 (1.24)			
Social Dance	95	1.56 (.89)			
Tennis	38	1.74 (.86)			
Weight Training	39	2.10 (1.11)			

Chapter 5

Discussion and Conclusion

Discussion

The purpose of this study was to examine the current physical activity habits and Body Mass Index of university students in comparison to 2011 Tennessee twelfth graders. The general activity and health courses were selected because they are often taken during the freshman year. In this study the majority of participants were seniors.

While results showed there was no association between type of course enrolled and BMI category, there was a significant relationship between hours of TV watched per day and BMI among the participating college students. This could be a trend extending from high school where the 2011 Tennessee YRBS reports that 36.8 % of twelfth graders watched three or more hours of TV per day (CDC, 2013).

When evaluating sport participation within the past twelve months, the results indicated there is a significant difference in the average of number of sports played among enrolled classes. One of the activity classes (soccer group) had the greatest average of number of sports played. Shifflett et al. had results with “more than half (52.8%)...reported they had participated in an interscholastic sports program in high school, and 50.3% reported that they had participated in organized physical activity...” (p. 152). This could suggest that enrollment in an activity class may increase the likelihood of sport participation.

It was predicted that students who were participating in activity classes would have a lower BMI and would report being more physically active than those students who were enrolled in a health class. While results showed that there was no difference in BMI between activity classes and the health classes, results did show that those enrolled in activity classes were more physically active than those enrolled in health classes.

General Conclusions

There are many factors contributing to an inactive lifestyle including busy schedules and a large amount of time spent viewing electronic media. There are some suggestions as how to reduce viewing time. For example, *Pediatric News* provides a few helpful guidelines on how to keep active and reduce the viewing time of electronic media. It is suggested that parents start early in limiting access to a television, pay attention to how much time the adolescent is spending watching electronic media and the content of what they are watching, and give children choices and opportunities to be active and creative (Finn, 2005). Finn's article also mentions the campaign by the Center for Disease Control called "VERB: It's what you do". VERB is viewed as successful and has increased activity time. By implementing these types of programs and activities in children's lives it is possible to reduce their electronic media viewing time and may help structure their future physical activity choices. Cecil-Karb and Grogan-Kaylor (2009) contend that to "engage organizations, community groups, and concerned citizens throughout the country in efforts to address local barriers..." prevent overweight young adults (p. 176).

As a society it should be a priority to encourage adolescents and young adults to be more active. Granich et al. (2010) suggest that educating children on the risk factors of being overweight or obese could help lower the numbers of overweight or obese children. They also suggest getting the family as a whole to be more active and adjust their lifestyles from a sedentary one to an active one (p. 208). Along these same thoughts, it is mentioned again by Ronspies and Messerole (2007) to have schools implement a curriculum to “provide and promote interventions” that will lead to higher physical activity time (p. A-96). To educate parents, the BBC is running a television series called Honey We’re Killing the Kids which “shows adults what their children may grow to become if they continue with their present diets and exercise” (*Screen Digest*, p. 352). All of these suggestions can be applied to adolescents and young adults attending a higher education institution. Both adolescents and young adults could benefit from adhering to these suggestions.

Kamarudin and Omar-Fauzee (2007) suggest that higher education institutions “develop a physical activity program that addresses students’ perceived barriers to physical activity” (p. 50). This would help eliminate cost concerns as well as availability. Physical activity would be encouraged by peers who are enrolled in physical activity classes, attend free classes offered at the university’s gym, or as a social factor. While engaging in physical activity they will more likely make better food choices and be more apt to participate in physical activity.

Recommendations for Future Studies

For additional research, it is suggested to survey a more proportional amount of activity classes to health classes. A shortened survey would also be suggested to increase more accurate responses. Instead of participant self-reporting of BMI, it would be beneficial for the administrator to collect this data to limit false information or reporting no information.

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APPENDICIES

Appendix A: MTSU IRB Certification

December 5, 2012

April Baird

CC: Don Belcher

Protocol Title: Evaluation of attitudes of university students toward physical activity

Protocol Number: 13-130

Dear Investigator(s),

The MTSU Institutional Review Board or its representative has reviewed the research proposal identified above. The MTSU IRB or its representative has determined that the study meets the criteria for approval under 45 CFR 46.110 and 21 CFR 56.110, and you have satisfactorily addressed all of the points brought up during the review.

Approval is granted for one (1) year from the date of this letter for **250** participants. Please use the version of the consent form with the compliance office stamp on it that will be emailed to you shortly.

Please note that any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918. Any change to the protocol must be submitted to the IRB before implementing this change.

You will need to submit an end-of-project report to the Office of Compliance upon completion of your research. Complete research means that you have finished collecting and analyzing data. Should you not finish your research within the one (1) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Failure to submit a Progress Report and request for continuation will automatically result in cancellation of your research study. Therefore, you will NOT be able to use any data and/or collect any data.

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance (c/o Emily Born, Box 134) before they begin to work on the project.

All research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion and then destroyed in a manner that maintains confidentiality and anonymity.

Sincerely,

Aleka Blackwell

Member, MTSU Institutional Review Board

Appendix B: CITI Human Research Completion Report

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report

Printed on 6/10/2013

Learner: April Baird (username: afmtsu)

Institution: Middle Tennessee State University

Contact Information Phone: 615-653-6965

Email: afmtsu@gmail.com

Social & Behavioral Research:

Stage 1. Basic Course Passed on 05/16/12 (Ref # 7938775)

Required Modules	Date Completed	Score
Belmont Report and CITI Course Introduction	05/16/12	3/3 (100%)
History and Ethical Principles – SBR	05/16/12	4/4 (100%)
Defining Research with Human Subjects - SBR	05/16/12	4/5 (80%)
The Regulations and The Social and Behavioral Sciences – SBR	05/16/12	4/5 (80%)
Assessing Risk in Social and Behavioral Sciences – SBR	05/16/12	5/5 (100%)
Informed Consent – SBR	05/16/12	5/5 (100%)
Privacy and Confidentiality – SBR	05/16/12	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects	05/16/12	3/5 (60%)
Middle Tennessee State University Module DEMO	05/16/12	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
 Professor, University of Miami
 Director Office of Research Education
 CITI Course Coordinator

Appendix C: Participant Consent Form

**Middle Tennessee State University Institutional Review Board
Informed Consent Document for Research**

Principal Investigator: April Baird MS Student
Study Title: Evaluation of Attitudes of University Students towards Physical Activity
Institution: Middle Tennessee State University

MTSU
IRB Approved
Date: 12/5/2012

Name of participant: _____ Age: _____

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below. You will be given an opportunity to ask questions, and your questions will be answered. Also, you will be given a copy of this consent form.

Your participation in this research study is voluntary. You are also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. Purpose of the study:

You are being asked to participate in a research study because we would like to know the attitudes university students hold towards physical activity and other health related quality of life issues. We know that attitudes impact decisions and consequently behaviors.

2. Description of procedures to be followed and approximate duration of the study:

You will be expected to allow us to measure your height/weight and complete a series of questionnaires which will take approximately 15 minutes of your time.

3. Expected costs:

No costs to participants in this research study.

4. Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study:

A few of the questions may be considered personal in nature. We will need your height and weight and will be asking questions about weight control practices (including use of laxatives and/or vomiting). We understand that some of these questions may make you uncomfortable but your responses will remain confidential.

5. Compensation in case of study-related injury: N/A

6. Anticipated benefits from this study:

a) The potential benefits to science and humankind that may result from this study are by assessing university students attitudes towards physical activity and quality of life issues we may better meet their needs within the university setting.

b) The potential benefits to you from this study are that you might be able to use the information as a information about your attitude toward physical activity and quality of life.

7. Alternative treatments available:

N/A

8. Compensation for participation:

No compensation for participation.

9. Circumstances under which the Principal Investigator may withdraw you from study participation:

You will only be excluded from the study if you have already completed the questionnaire in another class or do not complete the questionnaires.

10. What happens if you choose to withdraw from study participation:

There is no consequence to you for choosing to withdraw from this study.

11. Contact Information. If you should have any questions about this research study or possible injury, please feel free to contact April Baird at 615-653-6965 or arf2d@mtmail.mtsu.edu or my Faculty Advisor, Dr. Don Belcher at MTSU 615-898-2904 or belcher@mtsu.edu.

12. Confidentiality. All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

13. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

I have read this informed consent document and the material contained in it has been explained to me verbally. I understand each part of the document, all my questions have been answered, and I freely and voluntarily choose to participate in this study.

Date

Signature of patient/volunteer

Consent obtained by:

Date

Signature

Printed Name and Title

Appendix D: Physical Activity and Eating Habits Questionnaire

Study ID: _____ Date: _____

Selected Questions from the 2011 State and Local Youth Risk Behavior Survey:

Researcher's Section:

1. Height:

_____feet _____inches

2. Weight:

_____lbs

DIRECTIONS

* Use a #2 pencil only.

* Make dark marks.

Participant's Sections:

1. How old are you?

- A. 17 years of age
- B. 18 years of age
- C. 19 years of age
- D. 20 years of age
- E. 21 years of age
- F. 22 years of age
- G. 23 years of age or older

2. What is your sex?

- A. Female
- B. Male

3. What is your classification?

- A. Freshman
- B. Sophomore
- C. Junior
- D. Senior

4. What is your race? (Select one or more responses.)

- A. American Indian or Alaska Native
- B. Asian
- C. Black or African American
- D. Native Hawaiian or Other Pacific Islander

- E. White
- F. Hispanic

The next 5 questions ask about body weight.

5. How do you describe your weight?
 - A. Very underweight
 - B. Slightly underweight
 - C. About the right weight
 - D. Slightly overweight
 - E. Very overweight
6. Which of the following are you trying to do about your weight?
 - A. Lose weight
 - B. Gain weight
 - C. Stay the same weight
 - D. I am not trying to do anything about my weight
7. During the past 30 days, did you go without eating for 24 hours or more (also called fasting) to lose weight or to keep from gaining weight?
 - A. Yes
 - B. No
8. During the past 30 days, did you take any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight? (Do not include meal replacement products such as Slim Fast.)
 - A. Yes
 - B. No
9. During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight?
 - A. Yes
 - B. No

The next 7 questions ask about food you ate or drank during the past 7 days. Think about all the meals and snacks you had from the time you got up until you went to

bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

10. During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)
- A. I did not drink 100% fruit juice during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
11. During the past 7 days, how many times did you eat fruit? (Do not count fruit juice.)
- A. I did not eat fruit during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
12. During the past 7 days, how many times did you eat green salad?
- A. I did not eat green salad during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
13. During the past 7 days, how many times did you eat potatoes? (Do not count french fries, fried potatoes, or potato chips.)
- A. I did not eat potatoes during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days

- D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
14. During the past 7 days, how many times did you eat carrots?
- A. I did not eat carrots during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
15. During the past 7 days, how many times did you eat other vegetables? (Do not count green salad, potatoes, or carrots.)
- A. I did not eat other vegetables during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day
16. During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not count diet soda or diet pop.)
- A. I did not drink soda or pop during the past 7 days
 - B. 1 to 3 times during the past 7 days
 - C. 4 to 6 times during the past 7 days
 - D. 1 time per day
 - E. 2 times per day
 - F. 3 times per day
 - G. 4 or more times per day

The next 5 questions ask about physical activity.

17. During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
- A. 0 days
 - B. 1 day
 - C. 2 days
 - D. 3 days
 - E. 4 days
 - F. 5 days
 - G. 6 days
 - H. 7 days
18. On an average school day, how many hours do you watch TV?
- A. I do not watch TV on an average school day
 - B. Less than 1 hour per day
 - C. 1 hour per day
 - D. 2 hours per day
 - E. 3 hours per day
 - F. 4 hours per day
 - G. 5 or more hours per day
19. On an average day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Xbox, PlayStation, Nintendo DS, iPod touch, Facebook, and the Internet.)
- A. I do not play video or computer games or use a computer for something that is not school work
 - B. Less than 1 hour per day
 - C. 1 hour per day
 - D. 2 hours per day
 - E. 3 hours per day
 - F. 4 hours per day
 - G. 5 or more hours per day
20. In an average week, on how many days do you go to a physical activity course or a recreation program?
- A. 0 days
 - B. 1 day

- C. 2 days
 - D. 3 days
 - E. 4 days
 - F. 5 days
21. During the past 12 months, on how many sports teams did you play? (Count any teams intramural, recreation or church leagues).
- A. 0 teams
 - B. 1 team
 - C. 2 teams
 - D. 3 or more teams

2011 standard YRBS

Centers for Disease Control and Prevention. [2011] Youth Risk Behavior Survey. Available at: www.cdc.gov/yrbs. (Questions 1-7, 22-28, 67-86) Accessed on [May 3, 2012].

Revised PEPAS Survey

1=Strongly Disagree 2=Disagree 3=No Opinion 4=Agree 5=Strongly Agree

Physical Education...

1.improves my cardiorespiratory endurance.

5 4 3 2 1

2. improves my strength and my ability to move more quickly and effectively.

5 4 3 2 1

3. improves my coordination, posture and balance.

5 4 3 2 1

4. helps me to enjoy moving.

5 4 3 2 1

5. helps me to improve my self-knowledge and acquire an appreciation of what my body can do.

5 4 3 2 1

6. helps me to release tension, frustration and anger.

5 4 3 2 1

7. challenges me by testing my skill and courage.

5 4 3 2 1

8. helps me to be more aware of how my body moves and its position while moving.

5 4 3 2 1

9. helps me to learn different means of locomotion/moving from one place to another.

- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
10. teaches me to control my body when moving near obstacles or other people
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
11. teaches me to control how to push, pull, lift or support objects or people correctly and effectively.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
12. teaches me how to hit, kick or throw objects in the correct way with the desired distance and direction.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
13. teaches me how to catch or stop objects or otherwise absorb the momentum of a moving object.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
14. helps me to express ideas or feelings through movement.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
15. helps me to disguise bad feelings or present myself in a better light.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
16. helps me to use movement to make thoughts, ideas or feelings clearer.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
17. provides an opportunities to work with others toward a common goal.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
18. provides an opportunity to engage in individual and group competition.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
19. provides oppurtunities for me to motivate and influence group members to achieve common goals.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
20. allows me to socialize through physical activity.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
21. allows me to acquire more knowledge and appreciation of sports and other physical activities.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
22. helps me to learn about and appreciate the sports, games and dances of my country and other countries.
- | | | | | | |
|--|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|