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The Relationship Between Physical Activity Habits, Exercise Motivation, and Health-Related Fitness Levels in College Students

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THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY HABITS, EXERCISE MOTIVATION, AND HEALTH-RELATED FITNESS LEVELS IN COLLEGE STUDENTS

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Title: The Relationship Between Physical Activity Habits, Exercise Motivation, and Health-Related Fitness Levels of College Students

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This study was aimed at determining the interrelationship of self-reported physical activity habits, motivations towards exercise, and actual health-related fitness levels of college students at a large, State-owned university in Western Pennsylvania. Using a quantitative, correlational design, a convenience sample of students (N = 106) enrolled in three sections of HPED 143 – Contemporary Women's Wellness at Indiana University of Pennsylvania completed a Physical Activity Recall Survey (CDC, 2010) to measure physical activity habits and an Exercise Regulations Questionnaire (Markland, 2014) to measure exercise motivations. Pre-existing health-related fitness data was also used in the analysis of the research question, including the 20-meter PACER test, 90° push up test, one-minute curl up test, back-saver sit and reach test, and shoulder stretch test. After analysis of the three variables using Spearman rho correlations and setting the alpha level at 0.05, statistical significance was found between BMI Healthy Fitness Zone [Cardiovascular Healthy Fitness Zone (r = -.205, p = .042)], Cardiovascular Healthy Fitness Zone [Upper Body Healthy Fitness Zone (r = .304, p = .002), Muscular Guidelines (r = .250, p = .013)], Upper Body Healthy Fitness Zone [Muscular Guidelines (r = .341, p = .001), Flexibility Guidelines (r = .295, p = .004)], Motivation [Cardiovascular Guidelines (r = .255, p = .021), Muscular Guidelines (r = .268, p = .014), Flexibility Guidelines (r = .217, p = .049)], Cardiovascular Guidelines [Muscular Guidelines (r = .491, p = .000), Flexibility Guidelines (r = .335, p = .001)], and Muscular Guidelines [Flexibility Guidelines (r = .444, p = .000)].

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Ultimately, I thank God for creating the opportunity for me to study and help His people. I will always remember that everything I do, personally and professionally, is for His glory and not my own.

With Utmost Sincerity,

Michael David Kostick

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CHAPTER I

THE PROBLEM

Background

Healthy People 2020, which was an update of Healthy People 2010 and created by the United States Office of Disease Prevention and Health Promotion (ODPHP), outlined the status of American health habits, which range from access to health services to vision (ODPHP, 2015). Included in this information is baseline data from 2008 in relation to adults that engage in little-to-no leisure-time physical activity, meet national guidelines for weekly physical activity, and meet national guidelines for weekly muscle strengthening activities (ODPHP, 2015). According to this report (ODPHP, 2015), 32.6% of adults aged 18 and older report engaging in no physical activities. Inversely, only 18.2% of adults in the same age range report meeting the United States Department of Health and Human Service's (DHHS) guidelines (2008) of at least 150 minutes of aerobic physical activity and participation in muscle strengthening activities on at least two days weekly (ODPHP, 2015). The guidelines set forth by the DHHS are based on research suggesting the preventative benefits of aerobic and muscle strengthening physical activity (DHHS, 2008). Because the guidelines are exactly that, parameters of known beneficial levels of physical activity, it is easily adaptable to any individual to help prevent chronic cardiovascular and obesity-related diseases (DHHS, 2008). Even though the benefits of regular, moderate to vigorous physical activities have been extensively researched, less than 50% of college students aged 18-30 engage in physical activities that meet the DHHS guidelines (ACHA, 2015). The college student demographic is an important cohort to educate and have engage in lifetime physical activity (Hensley, 2000). While in their college years, these young adults will be forming and norming behaviors and attitudes towards several facets of life,

physical activity being an important one of these facets (Cluskey & Grobe, 2009). Even within this small demographic, first year college students are more susceptible to adverse physical activities than their upperclassmen peers (Tropp et al., 2011). Unfortunately, educating young adults is not the panacea. Students must become motivated by internal forces, rather than external sources, if any sustainable change in physical activity participation is to occur (Deci & Ryan, 1991). Thøgersen-Ntoumani (2015) found that individuals who are intrinsically motivated to exercise are more likely to be aerobically active and, contrariwise, individuals who are aerobically fit are more likely to be intrinsically motivated to continue exercising. For this reason, basic wellness instruction courses should help students set and monitor personalized wellness goals that internally motivate them to maintain these habits for their lifetime (Claxton & Wells, 2009).

Research Question

What is the relationship between physical activity habits, exercise motivation, and health-related fitness levels of college students?

Hypotheses

1. Participants who self-report engaging in regular moderate-to-vigorous physical activities within an average week's time will report higher levels of motivation.
2. Participants who self-report engaging in regular moderate-to-vigorous physical activities within an average week's time will score higher levels of health-related fitness.

Assumptions

- Participants answered truthfully and to the best of their ability while completing the physical activity recall survey.
- Participants put forth their best efforts while completing the health-related fitness testing

Limitations

- Participants were only from a convenience sample of students enrolled in HPED 143 – Contemporary Women's Wellness at Indiana University of Pennsylvania.
- Survey items that required self-reports may have produce responses that participants believe the researcher wanted.
- BMI is a reliable measurement of body composition for MOST young adults but can be skewed based upon excess muscle mass.

Significance

This research study was designed to gain insight into the relationships between college students' physical activity levels and their exercise motivation and actual levels of physical fitness. The pedagogical implications of this study may include how university health and well-being courses plan physical activity elements along with knowledge-based content. Because minimal research has been conducted on the inactivity of college students, the data from this research aimed to add statistics to a much needed field of study at the university levels. This importance is based on the fact that approximately 25% of the student population at any given university is enrolled in a health and well-being course each academic year (Hensley, 2000). Depending on the outcomes of this research study, universities may be able to better plan curricula for lifetime physical activity participation of college students transitioning to adulthood.

CHAPTER II

REVIEW OF RELATED LITERATURE

Overweight and Obesity

According to a recently published article (Ogden et al., 2014) 34.5% of American 12-19 year olds and 60.3% of American 20-39 year olds are overweight or obese. Similarly, the National College Health Assessment II (ACHA, 2015) observed that 35.1% of undergraduate students in United States universities and colleges are overweight or obese, which represents an almost 5% increase in the past seven years. Overweight and obesity, as defined by The Center for Disease Control and Prevention (2015), is having a body mass index of 25 kg/m^2 or higher. In other words, body mass index measures whether or not height and weight are proportionate based upon the average, healthy human being. Individuals who are overweight or obese are at an increased risk of developing a variety of chronic diseases and conditions including hypertension, dyslipidemia, diabetes mellitus, stroke, osteoarthritis, apneas, cancers, mental illnesses, overall bodily pain, and ultimately premature death (Jensen et al., 2013).

Transition to College

As students transition from high school to adulthood in a university setting, there can be changes to their environment, resources, and behaviors (Wengreen & Moncur, 2009). During this time, many students begin to form behaviors and attitudes that lead to lifestyle habits including physical activity and nutrition (Cluskey & Grobe, 2009). According to Ullrich-French et al. (2013), behaviors such as excess consumption of alcohol, lack of nutritional intake, and sedentary lifestyles are among the most commonly observed activities among today's college students. Due to physical inactivity and caloric consumption increases, young adults aged 18-29, gain more weight than any other group of adult individuals (Van Dyck et al., 2014). Recent

research has shown that freshmen in colleges gain, on average, 7.5 to 18.2 % in their first year (Tropp et al., 2011). Cluskey and Grobe (2009) found that students being examined almost unanimously agreed university change was difficult in regards to their own personal health habits. Among the unforeseen challenges faced by students as a result of college are lack of support from home, lack of set routines, the removal of previous engagement in sport-related activities, and ill-preparedness to adjust or circumvent issues related to weight-gain (Cluskey & Grobe, 2009). Studies continue to suggest that students transitioning from high school to college, and ultimately to the workforce, are in a period in their life where preventative interventions are key to weight management and improvement success (Wengreen & Moncur, 2009). Development of personalized health strategies and programs during college transition time can lead to lifetime participation and management strategies (Van Dyck et al., 2014).

Physical Inactivity in College Students

Overweight and obesity can be caused by several underlying factors, both behavioral and genetic. Physical inactivity is among the leading modifiable risk behaviors linked to overweight and obesity (Egli et al., 2011). Studies have suggested that exercising within certain guidelines are beneficial to the health of individuals by decreasing their likelihood of metabolic diseases, such as obesity, and certain cancers (de Bruijn et al., 2012). Cardinal, Jacques, and Levy (2002) suggest that the large percentage of overweight and obese students in colleges and universities is due, in large part, to lack of regular participation in moderate to vigorous physical activity. Only 47.2% of studied American college students reported that they engaged in either 30 minutes of moderate intensity exercise on 5 or more days per week or 20 minutes of vigorous intensity exercise on 3 or more days per week (ACHA, 2015). Even with these large numbers of insufficiently active students, research regarding this issue has been limited (Claxton & Wells,

2009). Claxton and Wells (2009) also places emphasis on using the United States Department of Health and Human Service's recommendations to improve specific types of physical activity, including cardiovascular, muscular, and flexibility exercises. According to the 2008 Physical Activity Guidelines (DHHS, 2008), Americans should engage in at least 150 minutes between three and five days per week of moderate to vigorous physical activity each week to reduce the risk of developing chronic health disparities.

Exercise Motivation

In a recent study, students with healthy weights suggested that despite having the time to exercise, considered it a low priority (Ullrich-French et al., 2013). Findings such as these have led to increased research on exercise science. As reported by Sidman, Fiala, and D'Abundo (2011), exercise motivation is a psychological variable that is measured on a continuum of external rewards or aversions and internal desires or drives. Many professionals have utilized the Self-Determination Theory (SDT), which is applied to exercise through the paradigms of autonomy, competence, and relatedness (Van Lange, Kruglanski, & Higgins, 2012). In SDT, autonomy is referred to in terms of intrinsic motivations, such as engaging in physical activity that is enjoyable or somehow nourishing to the individual's needs, and nonautonomy is referred to in terms of extrinsic motivations, such as rewards or eluding some type of punishment (Van Lange, Kruglanski, & Higgins, 2012). Most studies have suggested that those individuals who are intrinsically motivated are also more likely to continue engaging in physical activities throughout their lifetime (D'Abundo et al., 2014). Additionally, in longitudinal studies, intrinsic motivations have been shown to positively predict autonomy during physical education. Coincidentally, intrinsically motivated individuals have been positively correlated to self-reported and instrument tested physical activity (Ullrich-French et al., 2013). One thing to

consider based on motivations of college students are their previous experiences and choices in engagement. Studies suggest that college students who engaged in competitive sports during their high school years are more inclined to feel more confident and motivated intrinsically to engage in physical activities (Madonia, Cox, & Zahl, 2014).

University Interventions

As previously stated, students in colleges and universities across the United States are coming to school with increasingly unsatisfactory eating and activity habits (Topp et al., 2011). To remedy these insufficient habits, a common way to educate college students regarding healthy eating and exercise through university health and well-being courses. Focused on health and physical developmental needs, these wellness courses are at the forefront of university interventions designed to promote physical activity and health education (Hensley, 2000). Hensley (2000) reports that there is an increasing trend for universities to offer programs and classes which promote lifetime physical activities rather than sport-specific offerings that reach upwards of 20-30% of a university's student body per each academic year. Among the large numbers of physical activity programs across the United States and Europe, few studies have examined interventions promoting increases in student engagement in beneficial physical activity (Plotnikoff et al., 2015). In Plotnikoff's (2015) study, 29 college-level interventions from across the globe dealing with physical activity were evaluated based upon the effectiveness of their physical activity behavior modification interventions. Of the 29 universities reported, only 18 showed that significant changes by students were made as a result of the interventions. These results included gains in both frequency and duration of physical activity patterns (Plotnikoff et al., 2015). Studies have also suggested that colleges that require activity- and/or conceptual-based physical education courses see increased numbers of alumni that still engage in sufficient

amounts of physical activity (Adams & Brynteson, 1995). Unfortunately, there are studies that have suggested little to no improvement in student physical activity engagement through conceptual-based intervention programs where health topics are only discussed and studied with no physical activity component (Cardinal, Jacques, & Levy, 2002). Still, other studies have been performed that display adult attitudes toward health and wellness that are learned in hybrid activity- and conceptual-based programs are increased and maintained by 89% of alumni of the universities studied (Pearman, III et al., 1997).

CHAPTER III

PROCEDURES

The purpose of this study was to investigate the effects that physical activity habits have on exercise motivation and health-related fitness levels in college students. This quantitative, correlational research project compared fitness and exercise motivation results from students' self-reports of physical activity. Physical activity habits were evaluated based upon a Physical Activity Recall Survey (CDC, 2010). Exercise motivation was evaluated based upon a modified Exercise Regulations Questionnaire (Markland, 2014). Fitness levels were evaluated by using existing fitness data from the HPED 143 – Contemporary Women's Wellness class. These classes used the Cooper Institute's FITNESSGRAM testing protocols. Even though the FITNESSGRAM was created for the students in the K-12 setting, it has been deemed appropriate for adults up to age 30.

Participants

Participants in this study were undergraduate students at Indiana University of Pennsylvania (IUP) enrolled in one of three sections of HPED 143 – Women's Contemporary Wellness (N = 165). Of the total enrollment, 106 (64.2%) participants were available on the day of data collection, all of which participated in the study. Mean age of the participants was 19.48 years of age. Participants consisted of males (N = 16), females (N = 85), freshmen (N = 65), sophomores (N = 15), juniors (N = 5), seniors (N = 1), and in-season athletes (N = 4) who were enrolled in HPED 143 – Women's Contemporary Wellness at IUP during the Spring 2016 semester. Within the target population of students, the exclusion criteria included any subject who had known or had thought to have been pregnant during the duration of this study. The exclusion of pregnant subjects was exclusively due to the physiological changes that occur in the

body which could have potentially invalidated the results of this study. Additionally, this study was based on the typical college student. Individuals with potential health problems who required special considerations would have been excluded from the data collection depending on the condition. No students were excluded from participating in this study. Had students chosen not to participate in the data collection process they would have still been enrolled in the HPED 143 – Contemporary Women's Wellness course.

Recruitment

After Institutional Review Board research approval, site approval from the college Dean of Health and Human Services (Appendix A) and class professor of the HPED 143 – Contemporary Women's Wellness (Appendix B) participants were recruited. During scheduled class times for the HPED 143 Contemporary Women's Wellness courses, the primary researcher held informational sessions about the proposed study with all of the students in attendance. These sessions included the overview of the study, eligibility requirements, data collection procedures, potential risks, and potential benefits. A consent form (Appendix C) for the students containing information about the research study was distributed at that time.

Instrumentation and Procedures

Once the willing number of participants was determined by the completed consent forms, data collection incurred, including: (1) a physical activity recall survey and (2) the exercise motivation questionnaire.

Cardiovascular Risks and Health-Related Fitness Levels (Pre-existing Data)

Indicators of cardiovascular health for participants were determined by height and weight ratio. This indicator is a valid predictor of elevated cardiovascular risk factors (Zimmet et al., 2007). Height and weight measurements were used to calculate Body Mass Index (BMI) scores.

Testing of participants' height and weight measurements was completed by the professor of the HPED 143 – Contemporary Women's Wellness class. The existing data from this class activity was used in this research study for statistical analysis.

Measurements of fitness levels were also completed by the professor of the HPED 143 – Contemporary Women's Wellness class as a scheduled activity. Each student was partnered with another student and was tasked with recording measurements on the Fitness Assessment Record Sheet (Appendix F). Existing data from this class activity was used in this research study for statistical analysis. The FITNESSGRAM health-related fitness tests from the class activity included the, PACER, 90-degree Push-Up Test, Curl-Up Test, Back-Saver Sit-and-Reach, and the Shoulder Stretch test.

Physical Activity Recall Survey

The Physical Activity Recall Survey (Appendix D) is a physical activity questionnaire based on the National Health and Nutrition Examination Survey (CDC, 2010). This survey includes short questionnaires regarding themes such as dietary behavior, concurrent medical conditions, smoking and tobacco use, weigh history, and physical activity and physical fitness. The physical activity and physical fitness section of inquiries cover health-related fitness concerns ranging from cardiovascular fitness activities to sedentary behaviors. Participants in this study were asked to answer the 10-question survey to the best of their ability based upon weekly averages of the past 30 days of their life.

Exercise Regulations Questionnaire

The Exercise Regulations Questionnaire (BREQ-3) (Appendix E) (Markland, 2014) was also administered by the principal investigator. The BREQ-3 is the most commonly used measurement tool in psychological research based on the continuum of behavioral regulation in

exercise (Markland & Tobin, 2004; Wilson et al., 2006). This survey was used to calculate each participant's underlying motivation based on Deci & Ryan's (1985, 1991) theory of self-determination. The internal consistency of each scale on the BREQ-3 were as follows; Amotivation, α = .847, External Regulation, α =.749, Introjected Regulation, α = .793, Identified Regulation, α = .780, Integrated Regulation, unreported, and Intrinsic Regulation, α = .894 (D'Abundo et al., 2014). Scales for behavioral regulation, as defined by Markland (2014), include:

- Amotivation – the lack of intention to engage in an activity or behavior.
- External Regulation – behavior engagement due to an external authority with an unlikely chance of continuing the activity without external pressures.
- Introjected Regulation – behavior engagement due to an internally imposed pressure, usually manifested as guilt or need for self-esteem.
- Identified Regulation – behavior engagement due to an internalized value placed on the behavior.
- Integrated Regulation – behavior engagement due to an internalized sense that the behavior is an integral part of one's self.
- Intrinsic Regulation – behavior engagement due to an overall enjoyment of the behavior.

The BREQ-3 is used as a multidimensional scoring scale. Each measure of self-determination is represented by four questions per measure in the survey. Using a Likert scale to record answers, mean answers for each measure are then calculated to determine behavioral regulation. As displayed in Table 1, the survey items are grouped together determine the scales for behavioral regulation:

Table 1

BREQ-3 Scales for Behavioral Regulation

Behavioral Regulation	Related Questions			
Amotivation	2	8	14	20
External Regulation	6	12	18	24
Introjected Regulation	4	10	16	22
Identified Regulation	1	7	13	19
Integrated Regulation	5	11	17	23
Intrinsic Regulation	3	9	15	21

Design and Analysis

This research study uses a quantitative, correlational design. All statistics were analyzed using the IBM Statistical Package for the Social Sciences software. Frequencies and descriptive statistics were used to discuss demographic information gathered through the survey instruments. Independent t-tests using Levine's Test for Equality of Variance were used to determine mean differences between genders. Bivariate, Spearman's rho correlations were administered to analyze the interrelationship between physical activity habits, exercise motivations, and health-related fitness levels.

CHAPTER IV

RESULTS OF DATA ANALYSIS

The physical activity habits, exercise motivations, and health related fitness levels were established by gathering: 1) self-reported data on two survey questionnaires and 2) physical fitness data from a primary investigator-administered physical fitness test. This study investigated these variables to determine the relationship between physical activity habits, motivations towards exercise, and health-related fitness levels of college students. This chapter presents the survey and fitness testing results as it pertains to the research question of this study.

Description of the Sample

The data on college students' physical activity habits were collected through the use of a self-reported survey. The data on college students' motivations towards exercise were collected through the use of a modified self-reported questionnaire. The data on college students' health-related physical fitness levels were collected through a series of fitness tests completed by the professor of the classes. Students within three separate course sections of HPED 143 – Contemporary Women's Wellness at Indiana University of Pennsylvania received an informed consent letter asking them to participate in this study during regularly scheduled class times. During the one-day study, all 106 students present in class from the three sections completed the BREQ-3 and Physical Activity Recall Survey.

As shown in Table 2, the majority of participants were females (84.2%) with 85 participating. A total of 16 males (15.8%) also participated in this study. Most of the participants were freshmen (75.6%) with only 15 sophomores (17.4%), five juniors (5.8%), and one senior (1.2%).

Table 2

Demographic Information of Participants

		Frequency	Percentage
Gender:	Male	16	15.8
	Female	85	84.2
Grade Level:	Freshman	65	75.6
	Sophomore	15	17.4
	Junior	5	5.8
	Senior	1	1.2
In-season Athlete:	No	82	95.3
	Yes	4	4.7
High School Physical Education Curriculum:	Sport Education	42	52.5
	Lifetime Activities	36	45.0
	Outdoor/Adventure	30	37.5
	Weightlifting	26	32.5
	I Don't Know	12	15.0

Of all the participants, only four were in-season athletes (4.7%). The largest population of participant reported that their high school physical education curriculum was sport education (52.5%) based, whereas 12 participants did not know (15.0%) of what their high school curriculum consisted.

Analysis of the Variables

The variables that were analyzed in this study included college students' physical activity habits; their motivations towards exercise; and their health-related fitness levels. These items were measured based on a physical activity recall survey (CDC, 2010), behavior regulations survey questionnaire (Markland, 2014), and existing fitness data respectively.

College Students' Physical Activity Habits

To collect data for this variable, the Physical Activity Recall Survey was administered to all participants. Using measures of central tendency, mean scores and standard deviations of

participant responses were analyzed. As Table 3 shows, participants reported completing cardiovascular (μ=3.7449, σ=1.35101) activities more often throughout a normal week than muscle strengthening (μ=2.820, σ=2.0170) activities or activities to increase flexibility (μ=2.140, σ=1.6454).

Table 3

Descriptive Statistics of Physical Activity Recall Survey

	Mean	Standard Deviation
Days/week of walking or bicycling >1 mile	4.436	2.0853
Days/week of moderate to vigorous activities	3.188	1.5730
Days/week of vigorous activities	3.303	1.8923
Average days/week of Cardiovascular Activities	3.7449	1.35101
Days/week of Muscle Strengthening Activities	2.820	2.0170
Days/week of Flexibility Activities	2.140	1.6454

Based on the Office of Disease Prevention and Health Promotion's (2016) guidelines, frequencies and percentages of participants that did not meet, met, or exceeded guidelines for cardiovascular, muscular, and flexibility activities were determined. As shown in Table 4, 18 participants (18.2%) did not meet the recommended guidelines of three to five days of cardiovascular activities per week, 60 participants (60.6%) met, and 21 participants (21.2%) exceeded these recommendations.

Table 4

Frequencies and Percentages of Recommended Physical Activity

		Frequency	Percentage
Daily Cardiovascular Guidelines:	Does Not Meet	18	18.2
	Meets	60	60.6
	Exceeds	21	21.2
Daily Muscular Guidelines	Does Not Meet	32	32.0
	Meets	34	34.0
	Exceeds	34	34.0
Daily Flexibility Guidelines	Does Not Meet	37	37.0
	Meets	42	42.0
	Exceeds	21	21.0

Based on the recommendation of two to three days of muscle strengthening activities, 32 participants (32.0%) did not meet, 34 participants (34.0%) met, and another 34 participants (34.0%) exceeded the guidelines. For activities that increase flexibility, the recommendations are two to three days per week, leading to 37 participants (37.0%) not meeting, 42 participants (42.0%) meeting, and 21 participants (21.0%) exceeding the guidelines.

To compare mean scores by gender, an independent samples T-test was administered. As shown in Table 5, based on the Levine's Test for Equality of Variance and with an alpha-level of .05, statistical significance was found between males and females in flexibility guidelines ($t = 13.600$, $p = .000$), average physical activity levels compared to 12 months ago ($t = 7.793$, $p = .006$), and average physical activity levels compared to high school years ($t = 4.367$, $p = .039$).

Table 5

Gender Differences on the Physical Activity Recall Survey

	t	p
Average days/week of cardiovascular activities	.803	.373
Cardiovascular Guidelines	.283	.596
How many days/week did you strengthen muscles	.001	.974
Muscular Guidelines	1.297	.258
How many days/week did you increase flexibility?	1.882	.173
Flexibility Guidelines	13.600	.000
How many hours/day were you sedentary	.280	.598
Compared to 12 months ago	7.793	.006
Compared to high school years	4.367	.039
Compared to most men/women you age	.675	.414

College Students' Motivations Towards Exercise

To collect data for this variable, participants completed the modified Exercise Regulations Questionnaire (BREQ-3) (Markland, 2014). Tables 6-11 show the frequencies and percentages of the responses on the BREQ-3 based on regulation behaviors. As shown in Table 6, out of the all the items on the amotivation scale, the majority of participants responded in similar fashion to the items. For instance, 90.5% of participants strongly disagreed or disagreed with the statement, "I can't see why I should bother exercising." Very few participants were neutral or agreed with each statement.

Table 6

Frequencies and Percentages of Amotivation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I don't see why I should have to exercise	64 (61.5)	30 (28.8)	6 (5.8)	1 (1.0)	3 (2.9)
I can't see why I should bother exercising	60 (58.3)	30 (29.1)	7 (6.8)	4 (3.9)	2 (1.9)
I don't see the point in exercising	68 (64.8)	27 (25.7)	4 (3.8)	5 (4.8)	1 (1.0)
I think exercising is a waste of time	67 (67)	24 (24)	5 (5)	1 (1)	3 (3)

Table 7 shows the frequencies and percentages of the responses on the BREQ-3 external regulation scale. As with the amotivation scale, the majority of participants responded in a similar fashion. The highest rated item on the external regulation scale was the item stating, "I take part in exercise because my friends/family/partner say I should." This item had 20% (N = 21) of the participants either agree or strongly agree with that statement, indicating that family and friends are the biggest reported external influence.

Table 7

Frequencies and Percentages of External Regulation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I exercise because people say I should	30 (28.6)	33 (31.4)	27 (25.7)	10 (9.5)	5 (4.8)
I take part in exercise because my friends/family/partner say I should	26 (24.8)	33 (31.4)	25 (23.8)	16 (15.2)	5 (4.8)
I exercise because others will not be pleased with me if I don't	44 (41.9)	31 (29.5)	17 (16.2)	7 (6.7)	6 (5.7)
I feel under pressure from my friends/family to exercise	42 (40.0)	26 (24.8)	24 (22.9)	9 (8.6)	4 (3.8)

Table 8 shows the frequencies and percentages of the responses on the BREQ-3 introjected regulation scale. The highest rated item on the introjected regulation scale was the item stating, “I feel guilty when I don’t exercise.” This item had 58.7% (N = 61) of the participants either agree or strongly agree with that statement, indicating that exercise guilt is the highest reported introjected influence.

Table 8

Frequencies and Percentages of Introjected Regulation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel guilty when I don't exercise	7 (6.7)	14 (13.5)	22 (21.2)	35 (33.7)	26 (25.0)
I feel ashamed when I miss an exercise session	10 (9.7)	17 (16.5)	34 (33.0)	24 (23.3)	18 (17.5)
I feel like a failure when I haven't exercised in a while	11 (10.5)	27 (25.7)	18 (17.1)	28 (26.7)	21 (20.0)
I would feel bad about myself if I was not making time to exercise	8 (7.7)	16 (15.4)	28 (26.9)	28 (26.9)	24 (23.1)

Table 9 shows the frequencies and percentages of the responses on the BREQ-3 identified regulation scale. The highest rated item on the identified regulation scale was the item stating, “I think it is important to make the effort to exercise regularly.” This item had 83 participants (80.6%) either agree or strongly agree with that statement, indicating that the importance of effort placed towards regular exercise is the biggest reported identified influences.

Table 9

Frequencies and Percentages of Identified Regulation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It's important to me to exercise regularly	2 (1.9)	3 (2.9)	21 (20.0)	25 (23.8)	54 (51.4)
I value the benefits of exercise	1 (1.0)	1 (1.0)	21 (20.0)	31 (29.5)	51 (48.6)
I think it is important to make the effort to exercise regularly	2 (1.9)	2 (1.9)	16 (15.5)	36 (35.0)	47 (45.6)
I get restless if I don't exercise	11 (10.6)	24 (23.1)	39 (37.5)	20 (19.2)	10 (9.6)

Table 10 shows the frequencies and percentages of the responses on the BREQ-3 integrated regulation scale. The highest rated item on the integrated regulation scale was the item stating, "I exercise because it is consistent with my life goals." This item had 56 participants (55.9%) either agree or strongly agree with that statement, indicating that life goals are the largest reported integrated influence.

Table 10

Frequencies and Percentages of Integrated Regulation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I exercise because it is consistent with my life goals	2 (2.0)	16 (15.7)	27 (26.5)	35 (34.3)	22 (21.6)
I consider exercise part of my identity	17 (16.7)	26 (25.5)	26 (25.5)	19 (18.6)	14 (13.7)
I consider exercise a fundamental part of who I am	13 (12.4)	26 (24.8)	26 (24.8)	24 (22.9)	16 (15.2)
I consider exercise consistent with my values	4 (3.8)	12 (11.4)	40 (38.1)	29 (27.6)	20 (19.0)

Table 11 shows the frequencies and percentages of the responses on the BREQ-3 intrinsic regulation scale. The highest rated item on the intrinsic regulation scale was the item stating, "I get pleasure and satisfaction from participating in exercise." This item had 65.4% (N = 68) of the participants either agree or strongly agree with that statement, indicating that pleasure and satisfaction are the most reported intrinsic influences.

Table 11

Frequencies and Percentages of Intrinsic Regulation Responses on the BREQ-3

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I exercise because it is fun	11 (10.6)	14 (13.5)	31 (29.8)	30 (28.8))	18 (17.3)
I enjoy my exercise sessions	6 (5.7))	13 (12.4)	34 (32.4)	31 (29.5)	21 (20.0)
I find exercise a pleasurable	7 (6.8)	12 (11.7)	32 (31.1)	30 (29.1)	22 (21.4)
I get pleasure and satisfaction from participating in exercise	3 (2.9)	9 (8.7)	24 (23.1)	33 (31.7)	35 (33.7)

To analyze the exercise motivation of each participant, a mean score was calculated from the four statements per regulation category. The regulation category with the highest mean for each participant was then designated as their exercise motivation. Frequencies and percentages of the exercise motivations of participants was then analyzed. As shown in Table 12, 40 participants (46.0%) were categorized with Identified Regulation, followed by 24 participants (27.6%) with Intrinsic Motivation, and 16 participants (18.4%) with Introjected Regulation. Amotivation (n = 2, 2.3%), External Regulation (n = 2, 2.3%), and Integrated Regulation (n = 3, 3.4%) was populated with the fewest amount of participants.

Table 12

Frequency and Percentage of Exercise Motivations

	Frequency	Percentage
Amotivation	2	2.3
External Regulation	2	2.3
Introjected Regulation	16	18.4
Identified Regulation	40	46.0
Integrated Regulation	3	3.4
Intrinsic Regulation	24	27.6

College Students' Existing Health-Related Fitness Levels

To analyze the health-related fitness levels, participants' existing fitness testing data was used. Descriptive statistics were implemented to find the mean fitness scores based on gender. As shown in Table 13, Body Mass Index, right leg sit and reach, left shoulder stretch, and right shoulder stretch were scored better by females than by males.

Table 13

Descriptive Statistics of Health-Related Fitness Test Scores by Gender

		Mean	Standard Deviation
BMI	Male	26.640	6.1578
	Female	24.106	4.7470
20-Meter PACER	Male	36.44	23.449
	Female	23.24	11.071
Push Ups (to exhaustion)	Male	28.07	19.344
	Female	6.69	6.046
Curl Ups (per minute)	Male	50.20	13.284
	Female	41.54	17.630
Sit and Reach (Left)	Male	2.8789	4.35013
	Female	2.6498	3.59511
Sit and Reach (Right)	Male	2.7167	3.46207
	Female	2.8333	3.51655
Shoulder Stretch (Left)	Male	-.4821	4.46403
	Female	.5074	2.81507
Shoulder Stretch (Right)	Male	.3571	4.60947
	Female	1.6238	2.43399

To compare means between genders, an independent samples T-test was administered. As shown in Table 14, based on the Levine's Test for Equality of Variance and with an alpha-level of .05, statistical significance was found between males and females in the 20-meter PACER test ($t = 15.399$, $p = .000$), push up test ($t = 49.398$, $p = .000$), and the right shoulder stretch test ($t = 5.845$, $p = .017$).

Table 14

Gender Differences for Health-Related Fitness Levels

	t	***p***
BMI	.698	.405
BMI Healthy Fitness Zone	.499	.481
20-meter PACER	15.399	.000
Cardiovascular Healthy Fitness Zone	1.214	.273
Push Ups	49.398	.000
Upper Body Healthy Fitness Zone	3.755	.056
Curl Ups	1.163	.283
Abdominal Healthy Fitness Zone	1.676	.199
Sit and Reach (Left)	.515	.475
Sit and Reach (Right)	.002	.969
Shoulder Stretch (Left)	2.049	.156
Shoulder Stretch (Right)	5.845	.017

Using the FITNESSGRAM Healthy Fitness Zone performance standards (CDE, 2015), fitness testing scores were coded into the following categories: healthy fitness zone, needs improvement, needs improvement – health risk. Displayed in Table 15 are the frequencies and percentages of the fitness zones of the participants. In regards to Body Mass Index, 72 participants (72.7%) ranged in the Healthy Fitness Zone, 26 participants (26.3%) need improvement, and one participant (1.0%) was designated as needing improvement due to health risk. Based on cardiovascular scores, only 10 participants (9.9%) ranged in the Healthy Fitness Zone while 91 participants (90.1%) need improvement. Upper body muscular fitness scores were 41 participants (41.4%) in the Healthy Fitness Zone and 58 participants (58.6%) needing improvement. Regarding the abdominal muscular fitness scores, 93 participants (93.9%) ranged in the Healthy Fitness Zone, six participants (6.1%) fell in the need improvement category.

Table 15

Frequency and Percentage of Healthy Fitness Zone Levels

		Frequency	Percentage
BMI Healthy Fitness Zone	Healthy Fitness Zone	72	72.7
	Needs Improvement	26	26.3
	Needs Improvement – Health Risk	1	1.0
Cardiovascular Healthy Fitness Zone	Healthy Fitness Zone	10	9.9
	Needs Improvement	91	90.1
Upper Body Muscular Healthy Fitness Zone	Healthy Fitness Zone	41	41.4
	Needs Improvement	58	58.6
Abdominal Muscular Healthy Fitness Zone:	Healthy Fitness Zone	93	93.9
	Needs Improvement	6	6.1

Analysis of the Research Question

To analyze the relationship between college students' physical activity habits, motivations towards exercise, and health-related fitness levels, Spearman's rho correlations were used with an alpha-level set at 0.05. As shown in Table 16, statistically significant correlations were found for BMI Healthy Fitness Zone [Cardiovascular Healthy Fitness Zone (r = -.205, p = .042)], Cardiovascular Healthy Fitness Zone [Upper Body Healthy Fitness Zone (r = .304, p = .002), Muscular Guidelines (r = .250, p = .013)], Upper Body Healthy Fitness Zone [Muscular Guidelines (r = .341, p = .001), Flexibility Guidelines (r = .295, p = .004)], Motivation [Cardiovascular Guidelines (r = .255, p = .021), Muscular Guidelines (r = .268, p = .014), Flexibility Guidelines (r = .217, p = .049)], Cardiovascular Guidelines [Muscular Guidelines (r = .491, p = .000), Flexibility Guidelines (r = .335, p = .001)], and Muscular Guidelines [Flexibility Guidelines (r = .444, p = .000)].

Table 16

Spearman Correlations of Physical Activity Habits, Exercise Motivation, and Health-Related Fitness Levels

		BMI HFZ	Cardiovascular HFZ	Upper Body HFZ	Abdominal HFZ	Motivation	Cardiovascular GL	Muscular GL
Cardiovascular	r	-.205(*)						
HFZ	*p*	.042						
	N	99						
Upper Body	r	-.043	.304(**)					
HFZ	*p*	.676	.002					
	N	98	99					
Abdominal HFZ	r	-.109	.026	.078				
	p	.284	.801	.446				
	N	98	99	98				
Motivation	r	-.182	.190	.135	.054			
	p	.101	.085	.227	.631			
	N	82	83	82	82			
Cardiovascular	r	-.033	.097	.195	.010	.255(*)		
Guidelines	*p*	.753	.343	.058	.925	.021		
	N	95	97	95	95	82		
Muscular	r	.143	.250(*)	.341(**)	.010	.268(**)	.491(**)	
Guidelines	*p*	.163	.013	.001	.922	.014	.000	
	N	96	98	96	96	83	99	
Flexibility	r	.015	.111	.295(**)	-.042	.217(*)	.335(**)	.444(**)
Guidelines	*p*	.883	.278	.004	.683	.049	.001	.000
	N	96	98	96	96	83	99	100

Note: *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study reported college students' physical activity habits, motivations towards exercise, and health-related fitness levels. In total, 106 undergraduate students from Indiana University of Pennsylvania were solicited for this three-part research study. Analyses were conducted to determine the significance of, and relationship between, the three variables for future instructional implications. Within certain variables, gender variables were compared to determine statistically significant differences between males and females.

Throughout Chapter 1, the issue of physical inactivity and lack of motivation in college students is discussed. In Chapter 2, a review of the existing literature found that very little research had been completed on the exercise motivation and physical activity habits of college students even though many studies have reported increased weight gain during the college years. Outlined in Chapter 3 were the methodology and procedures of the research study including the sample population, data collection instrumentation, and the existing physical activity data that was used to analyze participants' health-related fitness levels. With the data collected, Chapter 4 offered statistical results of each variable separately and between each other to address the research question posed in Chapter 1. In Chapter 5, the collected data is summarized into meaningful findings which can provide recommendations for mandatory university wellness programs and future research endeavors related to physical activity habits, exercise motivation, and health-related fitness levels of college students.

Summary of Research Findings

In this research study, investigation of college students' physical activity habits, motivations towards exercise, and health-related fitness levels solicited data to answer the

question of the relationship between these variables. Physical activity habits of college students were split into three categories; the attainment of recommended cardiovascular, muscle-building, and flexibility-increasing physical activities throughout the average week. College students' underlying motivations towards exercise were delineated as amotivation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation as based on Deci & Ryan's (1985, 1991) theory of self-determination. Finally, the health-related fitness levels of college students were displayed as the attainment of body mass index, cardiovascular, muscular, and flexibility healthy fitness zones. Using Spearman's Rho correlations to answer the research question, there was a statistically significant relationship between the level of exercise motivation and the achievement of cardiovascular ($r = .255$, $p = .021$), muscle-building ($r = .268$, $p = .014$), and flexibility-increasing ($r = .217$, $p = .049$) physical activity guidelines. These scores mean that as motivation increases through the levels of self-determination, it is more likely that individuals will meet, or exceed, the recommended guidelines for physical activities. These findings lend credence to earlier research and substantiate the primary investigator's hypothesis that individuals with higher levels of motivation tend to continue engaging in physical activities throughout their lifetime (D'Abundo et al., 2014). However, there was very few statistically significant relationships to validate the hypothesis that individuals who are physically active regularly would score higher on their health-related fitness tests [Cardiovascular Healthy Fitness Zone with Muscular Guidelines ($r = .250$, $p = .013$), and Upper Body Healthy Fitness Zone with Muscular ($r = .341$, $p = .001$) and Flexibility Guidelines ($r = .295$, $p = .004$). Participants with higher body mass indices were inversely correlated with lack of achievement of cardiovascular Healthy Fitness Zones and vice versa ($r = -.205$, $p = .042$). This means that participants with lower height to weight ratios were

more likely to score within the 20-meter PACER test Healthy Fitness Zone than those with higher body mass index scores. In regards to muscle strength and endurance, there was a statistically significant correlation between participants who reported meeting, or exceeding, the muscle-building physical activity guidelines. These individuals were more likely to score within the upper body muscular Healthy Fitness Zone ($\rho = .341$, $p = .001$). As logic would dictate, this means that as individuals continue to engage in muscle-building physical activities throughout their lifetime, they are able to achieve muscular fitness. As previously stated, both motivation and health-related fitness levels were found to correlate with the attainment of physical activity recommendations. However, motivation and health-related fitness levels were not found to be significantly correlated [BMI Healthy Fitness Zone ($r = -.182$, $p = .101$), Cardiovascular Health Fitness Zone ($r = .190$, $p = .085$), Upper Body Healthy Fitness Zone ($r = .135$, $p = .227$), Abdominal Healthy Fitness Zone ($r = .054$, $p = .631$)]. This means that the participants' motivations towards exercising throughout their lifetime had no bearing on their one-time fitness testing scores.

Instructional Implications

Universities and colleges have a unique importance in the development of wellness courses that are designed to promote lifetime health and physical activity of their students (Hensley, 2000). The data from this research study has suggested that the more motivated an individual is in regards to engaging in routine, lifetime physical activities, the more likely they will engage in those activities. Subsequently, by participating in these activities, individuals have an opportunity to improve upon their health-related fitness, including their aerobic capacity, muscular strength and endurance, and joint flexibility. Elementary and secondary health and physical education is a vital setting for children and adolescents to learn fitness concepts and

become accustomed to physical activities that effect their health-related fitness. However, university-based health and wellness programs have historically been content heavy conceptual interventions that lack focus in actual engagement in physical activity (Plotnikoff et al., 2015). Statistical analysis of this particular research study should lend insight into creating more activity-based wellness course programming at the university level. Of the 106 participants in this study, 32.0% did not meet weekly muscle-building activity guidelines and 37.0% did not meet flexibility-increasing guidelines. Additionally, 90.1% of participants did not achieve the Healthy Fitness Zone for cardiovascular endurance and 58.6% did achieve the Healthy Fitness Zone for upper body muscular strength and endurance. With the ever increasing percentage of overweight and obese college students (Cardinal, Jacques, & Levy, 2002) it is imperative that university wellness programs lead the fight by offering students activity-based instruction geared towards engagement in enjoyable and motivating lifetime physical activities.

Recommendations for Future Research

This current research question of the relationship between physical activity habits, motivations towards exercise, health-related fitness levels of college students was investigated due, in part, to the limited background literature on the effects of physical inactivity on college students (Claxton & Wells, 2009). Findings of exercise motivation self-determination can lend insight into more in depth research based on college students underlying drives to choose whether or not to engage in health-enhancing physical activities. Out of convenience, only three of the nearly 15 sections of HPED 143 – Healthful Living offered in the Spring semester were selected to participate in this study, meaning that the sample population of 106 participants was miniscule in comparison to the maximum participation potential. Additionally, data collection from all university-mandated wellness course offerings, including face-to-face, hybrid, and

online versions from the departments of Kinesiology, Health, and Sport Science, Nutrition and Dietetics, and Nursing may have seen varied results based on choice of department, professor, and medium. Due to the nature of the convenience sample class, this research study had an abnormal proportion of female (N = 85) to male (N = 16) participants. Future research may want to gear studies based solely on single-gender grouping or more even gender distribution. Furthermore, more demographic information such as ethnicity, income, and access to facilities may lead to more insight into demographic differences and similarities within sample populations. Finally, to more accurately capture physical weekly physical activity habits, use of fitness technologies, such as accelerometers, would strengthen the data collected from participants.

Conclusion

Physical inactivity is one of the most commonly displayed characteristic of college students (Ullrich-French et al.,2013), and first year college students are most susceptible to adverse physical activities (Tropp et al., 2011). The data analyzed in this research has two purposes: 1) to add to the limited literature on physical activity habits, exercise motivation, and health-related fitness levels of college students and 2) to determine the relationship of these variables for use by university wellness courses. The significant correlations between levels of exercise motivation and the self-reported physical activity habits of college students perpetuates the need for basic wellness instruction courses to help students set and monitor personalized wellness goals that subsequently internally motivate them to maintain those habits for their lifetime (Claxton & Wells, 2009).

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Appendix A

Site Approval Letter from College Dean of Health and Human Services

Indiana University of Pennsylvania

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8 November 2015

Dear Dr. Mark E. Correia,

I am writing this letter to introduce you to a thesis research study that I would like to conduct within the Department of Kinesiology, Health, and Sport Science at Zink Hall. I will be conducting a thesis research study that will measure the relationships between physical activity levels, motivations towards exercise, and health-related fitness levels of college students. This thesis study is part of my requirements for the M.Ed. Health & Physical Education program at IUP.

The purpose of this project is to determine correlations between these variables to help shape and create fitness curricula in college level health and wellness courses. After participant recruitment in three sections of HPED 143 – Contemporary Women's Wellness, participants will be asked to complete a Physical Activity Readiness Questionnaire (PAR-Q), Physical Activity Recall survey, modified Behavioral Regulations in Exercise Questionnaire (BREQ-3), and engage in health-related fitness testing similar to that of the FitnessGram tests (aerobic capacity, muscular strength & endurance, flexibility, and body composition). Within the context of these findings, this study will allow students to obtain insight in regards to their own fitness levels and exercise motivation.

As the Dean of the college that houses the study site, I am writing you to specifically request site approval to initiate my study. Attached is a form to be completed and returned to me at your earliest convenience. If you have any questions please do not hesitate to ask myself or Dr. David Wachob, my faculty sponsor and thesis chair

The surveys and fitness testing would be conducted at IUP during the HPED 143 – Contemporary Women's Wellness scheduled course period. Participants will complete all surveys, questionnaires, and fitness testing over the course of only two class periods.

Results of this study will be presented and published with the hopes of providing insight into lifetime physical activity curricula in K-12 and Undergraduate settings.

Thank you very much for your time and consideration.

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Site Approval Form:

Please check one

x ___**Yes**, I give permission for you to conduct this thesis research study within Health & Well-being courses, which are housed within the department of Kinesiology, Health, and Sport Science at Zink Hall.

____**No**, I do not give permission for you to conduct this thesis research study within Health & Well-being courses, which are housed within the department of Kinesiology, Health, and Sport Science at Zink Hall.

College Dean: Mark E Correia

College Name: Health and Human Services

Signature:

Date: 11.8.2015

Thank you for your time and consideration.

Michael D Kostick, B.S.Ed

Appendix B

Site Approval Letter from HPED 143 Contemporary Women's Wellness Professor

Indiana University of Pennsylvania

Department of Kinesiology, Health, and Sport Science
Zink Hall, Room 225
1190 Maple Street
Indiana, Pennsylvania 15705-1087

724-357-2771
Internet: *http://www.iup.edu/kines/*

9 February 2016

Dear Dr. Christine Black,

I am writing this letter to ask permission to use three of your Spring 2016, HPED 143 – Contemporary Women's Wellness courses (HPED143-004, HPED143-005, HPED143-007) for a study that I would like to conduct within the Department of Kinesiology, Health, and Sport Science at Zink Hall. With your permission I will be conducting a thesis research study that will measure the effects of personalized and structured fitness programs on college students' motivations towards exercise and health-related fitness levels. This thesis study is part of my requirements for the M.Ed. Health & Physical Education program at IUP.

The purpose of this project is to determine correlations between these variables to help shape and create fitness curricula in college level health and wellness courses. After participant recruitment in three sections of HPED 143 – Contemporary Women's Wellness, participants will be asked to complete a Physical Activity Readiness Questionnaire (PAR-Q), Physical Activity Recall survey, modified Behavioral Regulations in Exercise Questionnaire (BREQ-3), and engage in health-related fitness testing similar to that of the FitnessGram tests (aerobic capacity, muscular strength & endurance, flexibility, and body composition). Within the context of these findings, this study will allow students to obtain insight in regards to their own fitness levels and exercise motivation.

As the faculty member whose class I am seeking participants, I am writing you to specifically request approval to house my study within your classes. Attached is a form to be completed and returned to me at your earliest convenience. If you have any questions please do not hesitate to ask myself or Dr. David Wachob, my faculty sponsor and thesis chair.

The surveys and fitness testing would be conducted at IUP during the HPED 143 – Contemporary Women's Wellness scheduled course period. Participants will complete all surveys, questionnaires, and fitness testing over the course of only two class periods.

Results will be presented and published with the hopes of providing insight into lifetime physical activity curricula in K-12 and Undergraduate settings.

Thank you very much for your time and consideration.

Michael D Kostick, B.S.Ed
Primary Researcher, Graduate Assistant
Department of Kinesiology, Health, and Sport Science
Indiana University of Pennsylvania

230 Zink Hall
1190 Maple Street
Indiana, PA 15705
Phone: 717.919.3537
Email: m.d.kostick@iup.edu

David A. Wachob, D.Ed, CAPE, CHES
Faculty Sponsor
Department of Kinesiology, Health, and Sport Science
Indiana University of Pennsylvania

233 Zink Hall
1190 Maple Street
Indiana, PA 15705
Phone: 724.357.3194
Email: d.wachob@iup.edu

Indiana University of Pennsylvania

Department of Kinesiology, Health, and Sport Science
Zink Hall, Room 225
1190 Maple Street
Indiana, Pennsylvania 15705-1087

724-357-2771
Internet: *http://www.iup.edu/kines/*

Site Approval Form:

Please check one

✓ **Yes**, I give permission for you to conduct this thesis research study within my Contemporary Women's Wellness courses.

____ **No**, I do not give permission for you to conduct this thesis research study within my Contemporary Women's Wellness Courses.

Faculty Name Dr. Christine Black

Signature Christine Black

Date 2/15/2016

Thank you for your time and consideration.

Michael D Kostick, B.S.Ed

Appendix C

Informed Consent Form

INFORMED CONSENT FORM FOR STUDY

My name is Michael Kostick and I am a Graduate Assistant in the Kinesiology, Health, and Sport Science department at Indiana University of Pennsylvania. I am studying for a Master's in Education in Health and Physical Education. I am requesting your assistance with my research study. Outlined in this consent form is information about my research so that you can decide if you want to participate in this study. It is OK for you to ask me questions about the study. My telephone number and email address are listed at the end of this form. I would like you to help me because you are enrolled in an HPED 143 – Contemporary Women's Wellness course at IUP.

What is the goal of this study?

I am conducting this study so I can learn more about college students' physical activity levels, motivations towards exercise, and their health-related fitness levels. The goal of any research study is to answer questions. I am trying to answer the following question:

? What is the relationship between physical activity habits, exercise motivations, and indicators of health related fitness of college students?

If you agree to take part in the study, what would you need to do?

- You would be asked to share your fitness testing data with the primary researcher. The fitness tests and indicators of cardiovascular risk will be completed as an activity during the regularly scheduled class period.
  Time Commitment – 1 minute (completed during class period)
- You would be asked to complete a Physical Activity Recall about your physical activity habits of the past week.
  Time Commitment – 2 minutes (completed during class period)
- You would be asked to complete a modified Behavioral Exercise Regulations Questionnaire (BREQ-3) about your attitudes, motivation, and behaviors in regards to exercise.
  Time Commitment – 2 minutes (completed during class period)

How long is the study?

This study will be completed during two class periods during the Spring 2016 semester. The first class you would be asked to complete the PAR-Q, Physical Activity Recall Survey, and BREQ-3. The second class you would be asked to have your height, weight, and body composition recorded and to complete the fitness tests.

Can being in the study hurt you?

If you participate in the study, nobody will be judgmental of your fitness levels. All information gathered will be kept confidential. Performing fitness testing and personal workouts may pose a minimal risk of muscle strains. You also may be exposed to muscle soreness or aches normally associated with exercise. The fitness tests you will be asked to perform are designed for children and adults aged 5-30 years of age and is appropriate for participants who experience problems such as knee pain when exercising.

What are the potential benefits if you join this study?

If you participate in the study you will receive general information into your own personal fitness levels. The things I will learn from this study will help me and other health and physical educators learn more about fitness motivation and curriculum creation for college students.

What other options do you have?

Participation in this study is voluntary. Fitness testing will occur as a classroom activity in the HPED 143 – Contemporary Women's Wellness. If you opt not to participate in this study your fitness testing data will be discarded and you will not receive the Physical Activity Recall Survey or Behavioral Regulations of Exercise Questionnaire. Choosing not to participate in this study will not affect your grade in anyway in your HPED 143 – Contemporary Women's Wellness class.

How would I keep your information confidential?

If you take part in this study, I will keep your information confidential. At the end of the study, I will store all research records in locked cabinets in my office and a secure password protected computer file for three years. I will not put names on any research data. Instead, I will label information with a study number or use a randomized fake name so no one knows your results. When I finish my research study, I will present my findings to the School of Graduate Studies and Research at IUP. I might also present what I have learned with other educators or researchers or publish the research, but I will always talk about groups of students or results, never about you personally. I will never share identifying information with anyone.

Primary Researcher

Mr. Michael D Kostick, B.S.Ed
Graduate Assistant
Department of Kinesiology, Health,
& Sport Science
Indiana University of Pennsylvania

230 Zink Hall
1190 Maple Street
Indiana, PA 15705
Phone: 717.919.3537
Email: m.d.kostick@iup.edu

Faculty Sponsor

Dr. David A Wachob, D.Ed, CAPE, CHES
Assistant Professor
Department of Kinesiology, Health
& Sport Science
Indiana University of Pennsylvania

233 Zink Hall
Indiana, PA 15705
Phone: 724.357.3194
Fax: 724.357.3777
Email: d.wachob@iup.edu

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724.357.7730).

If you would like to participate in the study, please print and sign your name on the top of the yellow signature page. If you do not want to participate, please sign in the middle of the yellow signature page and return. Please keep the white copy of this form for your records. Return the yellow signature page to me during your health and wellness class.

VOLUNTARY CONSENT FORM SIGNATURE PAGE

I have read and understand the information on the form and I agree that I can participate in this study. I understand that no one will know my individual answers or name. I have the right to change my mind and not participate at any time by calling, emailing, or writing to the primary researcher. I have an unsigned copy (white copy) of this Informed Consent Form to keep.

****

YES, I would like to participate in this study

Please print and sign your name in this section of the yellow signature page. Please keep the white copy of this form for your records.

Participant's Name (PLEASE PRINT):_____

Participant's Signature:_____

Date:_____

****

NO, I would not like to participate in this study

If you do not wish to participate in this study, please skip the surveys.

****

DO NOT WRITE IN THIS SECTION

Investigator's Review of Informed Consent

I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this research study, have answered any questions that have been raised, and have witnessed the above signatures.

Investigator's Signature:_____

Date:_____

Appendix D

Physical Activity Recall Survey

PHYSICAL ACTIVITY RECALL SURVEY

Name: _____ **In-season Athlete?** Yes No **Pregnant?** Yes No

Age: ____ **Gender:** Male Female **Level:** Freshman Sophomore Junior Senior

High School Physical Education Curriculum: (circle all that apply)

Sport Education Lifetime Activities Outdoor Adventure Weightlifting I don't know

HOW OFTEN DO YOU ENGAGE IN PHYSICAL ACTIVITY?

I am interested in your physical activity habits in the last 30 days. Using the survey below, please answer each question to the best of your ability. Please note that there are no right or wrong answers and no trick questions. I simply want to know about your current physical activity habits. Your responses will be held in confidence and only used for research purposes.

1) Over the past 30 days, on average how many days a week did you walk or bicycle ≥1 mile to go to class/work/errands?

0 1 2 3 4 5 6 7

2) Over the past 30 days, on average how many days a week did you complete tasks around the house that required **moderate** or **vigorous** effort (enough to cause light sweating or an increase in heart rate and breathing)?

0 1 2 3 4 5 6 7

3) Over the past 30 days, on average how many days a week did you engage in **VIGOROUS** activities for at least 10 minutes that caused **heavy** sweating and **highly** increased breathing and heart rate? (i.e. running, lap swimming, aerobics class, fast bicycling, etc.)

0 1 2 3 4 5 6 7

4) Over the past 30 days, on average how many days a week did you engage in **MODERATE** activities for at least 10 minutes that caused **light** sweating and **slightly** increased breathing and heart rate? (i.e. brisk walking, bicycling for pleasure, golfing, dancing, etc.)

0 1 2 3 4 5 6 7

5) Over the past 30 days, on average how many days a week did you engage in physical activities specifically designed to **strengthen muscles**? (i.e. lifting weights, push-ups, sit-ups, etc.)

0 1 2 3 4 5 6 7

6) Over the past 30 days, on average how many days a week did you engage in physical activities for at least 10 minutes that were specifically designed to **increase flexibility**? (i.e. stretching, yoga, etc.)

0 1 2 3 4 5 6 7

7) Over the past 30 days, on average how many hours per day did you spend sitting and watching television, playing video games, or using a computer?

<1 1 2 3 4 ≥5

8) Compared to 12 months ago, how active were you over the past 30 days?

Less Active About the Same More Active

9) Compared to your high school years, how active have you been in college?

Less Active About the Same More Active

10) Compared with most men/women of your age, how active do you believe you are?

Less Active About the Same More Active

Appendix E

Modified Exercise Regulations Questionnaire (BREQ-3)

EXERCISE REGULATIONS QUESTIONNAIRE (BREQ-3) [Modified]

Name: _____

WHY DO YOU ENGAGE IN EXERCISE?

I am interested in the reasons underlying peoples' decisions to engage or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. I simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

		Strongly Disagree				Strongly Agree
1	It's important to me to exercise regularly	1	2	3	4	5
2	I don't see why I should have to exercise	1	2	3	4	5
3	I exercise because it is fun	1	2	3	4	5
4	I feel guilty when I don't exercise	1	2	3	4	5
5	I exercise because it is consistent with my life goals.	1	2	3	4	5
6	I exercise because other people say I should	1	2	3	4	5
7	I value the benefits of exercise	1	2	3	4	5
8	I can't see why I should bother exercising	1	2	3	4	5
9	I enjoy my exercise sessions	1	2	3	4	5
10	I feel ashamed when I miss an exercise session	1	2	3	4	5
11	I consider exercise part of my identity	1	2	3	4	5
12	I take part in exercise because my friends/family/partner say I should	1	2	3	4	5
13	I think it is important to make the effort to exercise regularly	1	2	3	4	5
14	I don't see the point in exercising	1	2	3	4	5
15	I find exercise a pleasurable activity	1	2	3	4	5
16	I feel like a failure when I haven't exercised in a while	1	2	3	4	5
17	I consider exercise a fundamental part of who I am	1	2	3	4	5
18	I exercise because others will not be pleased with me if I don't	1	2	3	4	5
19	I get restless if I don't exercise regularly	1	2	3	4	5
20	I think exercising is a waste of time	1	2	3	4	5
21	I get pleasure and satisfaction from participating in exercise	1	2	3	4	5
22	I would feel bad about myself if I was not making time to exercise	1	2	3	4	5
23	I consider exercise consistent with my values	1	2	3	4	5
24	I feel under pressure from my friends/family to exercise	1	2	3	4	5

Modified from:
David Markland PhD, C.Psychol
School of Sport, Health & Exercise Sciences
University of Wales, Bangor
d.a.markland@bangor.ac.uk
October 2014

Appendix F

Fitness Assessment Record Sheet

Fitness Assessment Record Sheet

Name: _____Date: _____Section:_____

Height: _____ inches

Weight: _____ pounds

BMI = [Weight (_____)/Height (_____)^2] x 703 = _____ kg/m^2

Body Composition: _____

PACER Test: _____

1	2	3	4	5	6	7								
8	9	10	11	12	13	14	15							
16	17	18	19	20	21	22	23							
24	25	26	27	28	29	30	31	32						
33	34	35	36	37	38	39	40	41						
42	43	44	45	46	47	48	49	50	51					
52	53	54	55	56	57	58	59	60	61					
62	63	64	65	66	67	68	69	70	71	72				
73	74	75	76	77	78	79	80	81	82	83				
84	85	86	87	88	89	90	91	92	93	94				
95	96	97	98	99	100	101	102	103	104	105	106			
107	108	109	110	111	112	113	114	115	116	117	118			
119	120	121	122	123	124	125	126	127	128	129	130	131		
132	133	134	135	136	137	138	139	140	141	142	143	144		
145	146	147	148	149	150	151	152	153	154	155	156	157		
158	159	160	161	162	163	164	165	166	167	168	169	170	171	
172	173	174	175	176	177	178	179	180	181	182	183	184	185	
186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
216	217	218	219	220	221	222	223	224	225	226	227	228	229	230

Cadence Push-up Test: _____

4.5" Curl-up Test: _____

Back Saver Sit-and-Reach Test:

Left 1 _____ inches Right 1 _____inches

Left 2 _____ inches Right 2 _____ inches

Left 3 _____ inches Right 3 _____ inches

Shoulder Stretch Test:

Left 1 _____ inches Right 1 _____inches

Left 2 _____ inches Right 2 _____inches