

Psychosocial Determinants of Physical Activity in Undergraduate College Students
Alex B. Shafer, M.S.
Elizabeth F. Nagle, Ph.D.
Department of Health and Physical Activity
abs48@pitt.edu
(484) 269-7011

1) Statement of the Problem

The American College of Sports Medicine/American Heart Association (ACSM/AHA) recommends 30 minutes of moderate physical activity 3 days per week as the minimum amount required for health benefits and protection against cardiovascular heart disease (8). Despite these recommendations, less than half (49.1%) of U.S. adults are meeting the physical activity recommendation (4). Increasing rates of obesity and chronic disease related to unhealthy lifestyle choices including lack of physical activity remains a major public health concern (8). Compared to children/adolescents and older adults, young adults aged 18-30 years are an overlooked population, and appear in fewer research investigations exploring determinants of physical activity behavior. It has been estimated that only 50.4% of males and 39.9% of females age 18-30 are meeting the ACSM/AHA recommendations for exercise, and >30% of college students age 18-30 are overweight or obese (1). Considered a public health concern, physical inactivity and increased body fatness have been linked to metabolic risk factors and chronic disease (3,16). During a 2002 investigation of 226 college students, 29% of students aged 18-26 had undesirable total cholesterol, 10% had high systolic blood pressure, 11% of students had high diastolic blood pressure, greater than 50% consumed diets high in saturated fats, and had a risk of family history for cardiovascular disease (22). Therefore, it is important to explore factors that may explain exercise behavior in young adults and thus, may impact the overall health of these individuals. Understanding these factors will assist in the design, implementation, and promotion of exercise recommendations for improved adoption and adherence of physical activity in order to improve lifestyle behaviors of young adults.

Physical activity patterns and trends are unique to each individual and tend to fluctuate between adoption, maintenance, and relapse back to sedentary behavior (18). These patterns of exercise participation are determined by various factors. Several theoretical models (2, 15) have been used to explain the relationship between psychosocial factors and health-related physical activity behaviors. With the goal of explaining why individuals might be resistant to behavior change, such as increased physical activity. Considered modifiable psychosocial characteristics, *motivation*, *self-efficacy*, *social influences*, and *perceived benefits* have been strongly correlated to physical activity behavior, and considered mediators of exercise behavior (20). The majority of these studies focused on adult populations, and recent developments have shown different patterns in determinants between specific age groups and sex groups (5). However, to date there is insufficient data on the young adult population to completely understand these differences. Therefore, **the purpose of this investigation is to examine the relation between known modifiable determinants of physical activity with self-reported physical activity in young adults.** The following primary and secondary aims will be conducted:

1. To explore the relationship between physical activity and modifiable psychosocial variables of: 1) motivation, 2) self-efficacy, 3) social influence, and 4) perceived benefits.
2. To examine whether young adult males and females differ in psychosocial predictors of physical activity behavior.

2) Theoretical/Conceptual Framework

There is an extensive body of literature describing psychosocial determinants of health-related physical activity. Previous investigations have used the Transtheoretical Model of Behavior Change

(15), Social Cognitive Theory (2), and the Self-Determination Theory (6) to understand resistance to behavior change. Modifiable psychosocial variables with the highest correlations to physical activity derived from the above mentioned constructs are well documented in the literature and include: 1) intrinsic and extrinsic motivation (23); 2) social influences or social support for exercise (17); 3) self-efficacy for exercise (14); 4) perceived benefits including exercise enjoyment and ratings of ones body image (9). However, few studies have identified differences between gender or age, specifically between young, middle-aged, and older adults (5, 21). Evidence suggests that motivation for exercise, with opportunities for competition are important to males, while females are more influenced to exercise by social support (5). Previous studies targeting young adults in a college population have not identified clear trends related to college age specific determinants of physical activity.

Behavioral interventions have demonstrated positive outcomes on short-term exercise adherence (11). Yet only minor success has been demonstrated to improve long-term maintenance of exercise behavior. Perhaps a clearer understanding of gender and age specific determinants of exercise adherence would enhance the success of these programs. Upon completion of this investigation the primary age and gender specific determinants of physical activity may be established. This in turn can be used in future research interventions that focus on improving physical activity behavior in young adults.

3) Methods, Design and Procedures

The proposed project is a cross-sectional study to examine psychosocial variables associated with exercise behaviors in undergraduate college students. A random sample of 144 males and females ages 18-30 will be recruited for this investigation. Subject recruitment will utilize advertisements distributed across the University of Pittsburgh including campus newspapers and flyers posted in select campus locations. Prior to data collection, all participants will read an informed consent document in order to explain the nature of the research, its risks, and benefits, and rights as a potential research subject. The University of Pittsburgh's Institutional Review Board (IRB) will approve all procedures prior to implementation.

Upon the first visit to the Center for Health-Fitness Research, participants will complete a 6 page written questionnaire packet containing validated scales to assess demographics and *self-report physical activity* (19). Also included are measures of psychosocial variables relating to four core variables: 1) *motivation* (7); 2) *self-efficacy* (11); 3) *social influence* (17); and 4) *perceived benefits* (9, 25). In addition to standard demographic characteristics, other health behaviors including tobacco and alcohol use will be assessed. For its usefulness in evaluating physical activity of young adults on a college campus, a survey questionnaire is ideal for its low cost, ease of data collection, and short turnaround for availability of results (10). Anthropometric measurements to assess body size and body composition will be performed by a trained exercise physiologist. Height (m), without shoes, will be measured twice and the average used for analysis. Body weight (kg) and Body Composition (%fat and lean body mass) will be assessed using the Tanita Body Fat analyzer (Tanita Corporation, Skokie, IL), leg-to-leg bioelectric impedance analysis (BIA) scale. BIA provides a quick, easy and accurate estimate of percentage of body fat, fat mass (kg) and fat-free mass (kg). Height (m) and weight (kg) will be used to calculate body mass index (kg/m^2).

The Stanford 7-day Physical Activity Recall Scale (7-D PAR) will be administered to assess self-reported regular physical activity (19). This instrument estimates both work-related and non work-related physical activity. For each day of the past week, participants will report approximate number of hours and minutes they slept and spent in moderate, hard, and very hard physical activity. The 7-D PAR has demonstrated adequate test-retest reliability (.73) (19), and validity compared to direct measures of physical activity (24). *Motivation* will be measured using the Situational Motivation Scale (SIMS). This 16-item scale assessed four subscales of motivation with the internal consistency values of: (Cronbach's α); 1) Intrinsic motivation (.95); 2) Identified regulation (.80); 3) External regulation

(.86); and 4) Amotivation (.77) (7). Self-efficacy can be defined as “one’s belief or confidence in their ability to perform a specific behavior”, and is a strong determinant of exercise behavior (13). *Exercise self-efficacy* will be assessed using a scale developed by Marcus and Selby. This brief 5-item questionnaire assesses confidence in one’s ability to exercise under conditions that might affect participation, with internal consistency demonstrated as (.76) (11). *Social influences* will be measured using the Social Support for Exercise Scale (17). Sallis et.al found this scale to be correlated with exercise habits, providing evidence of concurrent criterion-related validity. Exercise enjoyment and body image scales will represent assessments of *Perceived benefits* of exercise. Exercise enjoyment will be assessed using the Physical Activity Enjoyment Scale (PACES) that determines “the extent to which an individual experiences a particular physical activity as enjoyable at a given point in time”(9). Factorial validity and convergent evidence for construct validity indicate that the PACES is a valid measure of physical activity enjoyment (9). The Contour Drawing Rating Scale will be used to measure Body Image. This scale consists of a nine-figure silhouette rating used to measure body perception. Seven-day test-retest reliability for self-ideal ratings using the Contour Drawing Rating Scale was (.79) and the scale has been validated against body weight parameters (.71) (25). Data will be recorded on scantron forms and scanned to obtain subject’s responses for the above-mentioned questionnaire.

4) Data Analyses

Separate analyses will be done for males and females because of evidence in the literature that the relative contribution of the predictor variables may differ by gender (5). As the first step in data analysis, descriptive statistics will be computed for demographics, BMI, the five predictor variables, and the dependent variable, physical activity. The distributions of the variables will be examined within each gender to identify any instances of outliers and/or evidence of severe violation of the assumption of normality.

Prior to running the regression analysis, bivariate correlations between all pairs of variables will be computed for the male and female subsamples. Finally, separate simultaneous multiple regression analyses will be carried out for the male and female samples. Total weekly hours of physical activity will serve as the dependent variable. The predictor variables will include motivation, self-efficacy, social influences, exercise enjoyment, and body image. All statistics will be run using SPSS version 18.0, with an alpha level of $p < 0.05$.

5) Anticipated Conclusions and Contribution to Education

College students are an understudied population at risk for sedentary behaviors. This investigation will provide insight to cohort specific determinates of health-related physical activity. It is hypothesized that higher levels of self-reported motivation, self-efficacy, social support, exercise enjoyment and positive body image will be associated with higher levels of physical activity. Additionally, motivation is hypothesized to be a stronger determinant of physical activity for males and social support for females. The logical progression of this data would include the use of these correlates as target variables (determinants) for future behavior interventions that target improving physical activity behaviors in undergraduate college students. Improved physical activity behaviors that reflect superior intervention strategies could lead to development of a standardized approach to programming. Long term, this could have direct application in surroundings within higher education. An example of this is the University of Pittsburgh Freshman Seminar (FP 0003) Course. This course is used to integrate incoming freshman to college life and where a health promotion program could possibly be most beneficial to students.

6) References

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Budget and Justification

Budget

<u>Items</u>	<u>Cost</u>
1. Stipend for participation, (144 subjects @\$10.00 per subject)	\$1,440.00
2. Survey forms (6 pages/ea.), (144 copies @\$0.05/ea.)	\$43.20
TOTAL	\$1,483.20

Justification

1. Subject Stipend. Recruitment of 144 males and females aged 18-30 years completing a 6-page questionnaire during one laboratory visit will be greatly enhanced if subjects are paid a modest stipend for their participation.
2. Funding for survey forms is requested because the primary evaluation tool for this investigation includes a 6-page questionnaire.