Robert Wildman: Synopsis for IRB Application

Title: Nutrition, Activity, and Behavioral Survey and Anthropometric Assessment of Campus and Local Populations

Contact Information for Researcher Submitting Proposal:
Robert Wildman PhD RD LD FISSN
Assistant Professor
Food and Nutrition
Department of Family & Consumer Sciences
Texas State Unioversity
rwildman@txstate.edu
512-245-7056

Source of Potential Subjects: Participants will be recruited from the Texas State University student body as well as from the surrounding San Marcos community. Participants will be at least 18 years of age and be recruited specific to target age, gender, academic year, major, athletic activities and/or behavior. Participants will be recruited via announcement in pertinent classes, by flier distribution and via word of mouth, advisor, trainer or coach depending on the participant. The number of participants recruited per study population will vary depending on data set application/study design and statistical power analysis.

Rational for Research Platform: Body weight and more specifically its composition, are among the most influential factors in determining the health and wellness of an individual. Incidentally, they are also among the easiest to assess and by non-invasive means. According to the CDC, more than one third of U.S. adults (>72 million people) and 16% of U.S. children are obese.[1] Since 1980 obesity rates for adults have doubled, and rates for children have tripled. Obesity rates among all groups in society—irrespective of age, sex, race, ethnicity, socioeconomic status, education level, or geographic region—have increased markedly. College campuses are no exception and recent study suggests that college freshman weight gain is higher than age-matched individuals who are not attending college.[2,3] This has led to the campus legend of the "Freshman 5", "10" or "15" and other research suggests that college students consume too much fat and not enough fruits and vegetables.[4]

Among the strongest predictors of weight gain during the freshman year are on-campus residency and decreased physical activity.[2] Beyond freshman year, sophomores and upper classmen, as well as sub-populations, are also vulnerable to weight and wellness issues. College students participating in focus groups have indicated that key motivator themes for healthy eating include sport performance, attractiveness and long-term health, and taste, presentation/preparation and accessibility could be key enablers of healthier eating.[5] It is important to understand, that many factors influence an individual's diet choices, activity type/level and behaviors which can in turn influence overt measures of wellness as well as attitudes, needs assessment and self-perception of efficacy. On the other hand, very little

information is known about faculty, staff and campus community residents and there is indeed an opportunity to physically assess athletes in an effort to better understand the means to fully optimize performance.

Objectives of Research Platform:

Texas State University and its supporting communities present several opportunities to study general urban populations (e.g. San Marcos, Austin, San Antonio), as well as specific sub-categories such as Texas State University academic year, age, major, gender, sport, lifestyle, ethnicity, station, etc. The objectives of this research program are to:

- Build a sustainable platform for collecting basic quantitative and qualitative data involving people and allowing for progressive data pools as well as serial assessment
- Measure and assess the anthropometric status of students and members of surrounding communities
- Assess specific populations including athletes, fitness enthusiasts, sedentary, majors and academic level.
- Determine the potential positive impact of access to wellness tools such as nutrition and exercise planners, trackers, calorie balancers and body measurement trackers on the reduction of weight gain during freshman year as well as to promote positive changes in other individuals
- Better understand the principal drivers of diet, activity and behaviors associated with campus lifestyle (e.g. food availability, university commons, social, stress)
- Identify potential modifiers that can lead to improvements in health indices and physical and emotional wellness of students, staff, faculty, and surrounding community members.
- Identify potential needs within a student and campus environment of support groups, teams, mentor programs, etc.

General Methodology:

- Student, staff, faculty and other individuals will be recruited to participate in a large research program through a variety of avenues including the campus newspaper, campus postings, class room announcements, student clubs, announcements, etc.
- Participants will set appointments with FCS staff via email or phone and will receive the Consent Form prior to appointment.
- Appointments will be set to visit the FCS laboratory during predetermined times.
- Upon arrival, the program and all applicable protocols will be explained to the participant. At that time, the participant and investigator(s) will identify those measurements that will be applied.
- BODPOD and Bioelectrical Impedance Analysis (BIA) with follow standard protocols established by Life Measurement Inc and RJL Systems, respectively and will be administered by highly trained individuals.
- Participants will be directed to an area to complete the appropriate food, activity, behavior and perceptions questionnaire (paper or on-line), or based on participation

designation and/or available technology (e.g. surveymonkey.com or zoomerang.com), the participant may be allowed to complete the survey on-line at a later time or via paper method and based on availability or timing.

- Example questionnaire components include Fruit and Vegetable Screener (US National Cancer Institute), MEDFICTS Dietary Assessment Questionnaire, Harvard School of Public Health FFQ, etc. Special consideration will occur for utilizing the most applicable questions in the survey based on subpopulation characteristics. (See examples of FFQs, Food Consumption Screeners from NIH, National Cancer Institute and Harvard University)
- All data will be securely stored with access available only to the PI and co-PIs to ensure confidentiality.
- Data will be pooled and categorized based on general populations and subpopulations for cross-sectional and serial assessment via regression analysis and other analytical means.

Equipment/Tools:

- Stationary equipment is located in the Anthropometric & Biochemical Laboratory (ABL) in the FCS Building. – BODPOD, BIA, Scales, Statiometer, Tape measures,
- On-line support provided by LifeStyles Technologies. 220 profiles have been donated for research purposes at no cost. Additional profiles will be made available at a nominal cost. Example Profile:
    - Web Support - http://tsu.dmwebpro.com/
        - Demo username: bobcat
        - Password: fitness
- www.The NutritionDr.com will license (at no cost) nutrition, exercise and fitness information customized to TSU and this program

Potential Risks: The research activities proposed pose no more than minimal risk to physical and emotional health. Although it is it recognized that there is some risk of emotional distress associated with gaining a greater awareness of current nutrition practices and anthropometric measures in accordance with standards associated with better health and wellness. In addition, participation in the BODPOD can pose a minor risk for some individuals who are uncomfortable in being in a confined environment.

Procedures for Protecting and Minimizing Risk: In order to minimize risk of emotional distress all surveys, procedures and results will be fully explained to potential participants. In addition, example questions from surveys will be provided to potential participants on request. Furthermore, individuals will be pre-screened for history and comfort level associated with confined environments. Participants will receive a full overview of the BODPOD, including methods for discontinuing the test at any point as well as the large window in the front of the device which allows them to see their progress on the collateral monitor and be in contact with a technician. Lastly, time in the BODPOD will be absolutely minimized to just a few minutes and then participants be allowed to exit the unit. Pictures and/or video clips will be accessible to potential participants for full clarity of procedures.

Benefits to Participants:

- Professional physical assessment key health indices including:
    a. Acute and serial body weight measurement
    b. Acute and serial body composition assessment (% BF and total Fat Mass and Fat Free Mass)
    c. Acute and serial BMI assessment
    d. Access to nutrition, exercise/fitness planning and tracking tools
- Professional guidance in regard to nutrition, health and fitness topics
- Participation in other programs that can influence positive changes on campus and in the community that can foster improvements in health
    a. Some programs will incorporate the anthropometric assessment above.

Benefits to the Researcher and FCS Department:

- Data collection will serve to provide a snapshot of the physical status of TSU students and their attitudes with enabling and motivational triggers
- Data will serve as pilot statistics for greater investigation of related topics and in particular specific sub-populations and private, industry, local, state and federal funding
- The research program will serve as a model of data collection and will be reproducible at collaborating universities in 2011 to verify findings and provide a better understanding situations and efficacy of modifications. Multi-university collaborative efforts will be as targeted methodology for state and federal funding.
- Potentiation of the awareness and leadership of FCS in personal health and wellness promotion
- Recruitment tool for perspective FCS graduate students interested in studying physical, dietary, activity and lifestyle factors of health and wellness
- Fostering of interdepartmental relations and research investigation
- Potential development of a marketable University Wellness Research Foundation supported by alumni, private and industry contributions

Benefits to the University:

This research program will benefit the university in several ways including:

- Obtaining a physical and wellness snapshot of student body, staff, faculty and members of the surrounding communities
- Gaining a better understand the principal drivers of diet, activity and behaviors associated with TSU campus lifestyle
- Identification of potential needs of the student within the campus environment to promote greater health and wellness.
- Creation of a measureable, interdepartmental campus-wide wellness focus that is marketable and will aid in student recruitment and retention and set TSU apart from other universities. In essence TSU would provide the education and tools to foster intellectual growth as well as personal wellness.

Risk Benefit Analysis: Given the high likelihood of success in measurements compared to the low likelihood of emotional stress, this project seems to be of substantially more benefit than potential harm.

Compensation: No party will receive payment, extra credit, or any other similar incentive as a result of participating in the proposed research activities.

Timeline to Commence:

Pending IRB approval, commencement of activities would begin January/February 2010 and will be on-going. The first attempt to collapse data and begin statistical work will commence in February as part of an Independent Study project involving Musical Theater majors and potentially one sport team.

References:

1. Centers for Disease Control and Prevention; http://www.cdc.gov/obesity/. Accessed 9/03/2010
2. Crombie AP, Ilich JZ, Dutton GR, Panton LB, Abood DA. The freshman weight gain phenomenon revisited. Nutr Rev. 2009 Feb;67(2):83-94.
3. Mihalopoulos NL, Auinger P, Klein JD.The Freshman 15: is it real? J Am Coll Health. 2008 Mar-Apr;56(5):531-3.
4. Cluskey M, Grobe D. College weight gain and behavior transitions: male and female differences.J Am Diet Assoc. 2009 Feb;109(2):325-9.
5. Walsh JR, White AA, Greaney ML. Using focus groups to identify factors affecting healthy weight maintenance in college men. Nutr Res. 2009 Jun;29(6):371-8.

Key Abstracts.

Hoffman DJ, Policastro P, Quick V, Lee SK.Changes in body weight and fat mass of men and women in the first year of college: A study of the "freshman 15". J Am Coll Health. 2006 Jul-Aug;55(1):41-5.

Students entering their first year of college are faced with many stresses and changes, including changes in eating and exercise behavior. A common but often undocumented myth among college students is that there is a high risk of gaining 15 pounds of weight during freshman year. The objective of this study was to measure changes in body weight and percentage of body fat among first-year college students. Using a digital scale with bio-electrical impedance, the authors measured height, weight, and percentage of body fat for a sample of students who volunteered to be weighed during a health assessment in the university dining halls. The authors sent e-mails inviting those same students to complete a second measurement in February of the academic year. Sixty-seven of the 217 students who volunteered for the health assessment agreed to undergo a second set of measurements in the spring. The mean change in body weight was 2.86 pounds (1.3 kg, SD = 4.0 kg), and the mean change in percentage of body fat was 0.7% (SD = 4.0%). For those students who gained weight only, the mean increase in body weight (as measured by body mass index, weight divided by height in kg/m2) was 6.82 pounds (3.1 +/- 2.4 kg) and percentage of body fat was 0.9 +/- 3.8%. The authors found that the first year of college is a period in which weight and fat gain may occur. The exact causes behind these changes are unclear and warrant further research to plan or improve intervention and prevention.

Vella-Zarb RA, Elgar FJ. The 'freshman 5': a meta-analysis of weight gain in the freshman year of college. J Am Coll Health. 2009 Sep-Oct;58(2):161-6.

OBJECTIVE: (1) To use the available research to estimate the amount of weight gained by college freshman during their first year of college. (2) To identify potential predictors of freshman weight gain.

METHODS: A meta-analysis was conducted in November 2008. The analysis focused on articles published in English scientific journals between 1985 and 2008 available on the MEDLINE, Web of Science, and PsycINFO databases and excluded studies of weight change over periods beyond freshman year.

RESULTS: Twenty-four studies met the inclusion criteria. Based on a pooled sample of 3,401 cases, mean weight gain was 3.86 (95% confidence intervals [CI] = 3.81-3.91) lbs. Potential contributors to gain were recent dieting, high baseline weight, and psychological stress.

CONCLUSIONS: The first year of college is a period of vulnerability for weight problems. Further research is needed to better understand freshman weight gain and devise appropriate prevention strategies based on predictors of gain.

Mihalopoulos NL, Auinger P, Klein JD. The Freshman 15: is it real? J Am Coll Health. 2008 Mar-Apr;56(5):531-3.

OBJECTIVE: The belief that college students gain 15 lbs during freshman year is widespread, yet the evidence for this is limited. The authors aimed to determine whether college students gain weight during freshman year.

PARTICIPANTS: The authors studied unmarried freshmen living on-campus at a private university in the northeastern United States.

METHODS: The authors used an online survey to collect information about social behaviors and weight.

RESULTS: The authors observed an average weight gain of 2.7 lbs. About half of the students gained weight, and 15% lost weight. Men gained more weight than did women.

CONCLUSIONS: Freshman weight gain was 5.5 times greater than that experienced by the general population.

Crombie AP, Ilich JZ, Dutton GR, Panton LB, Abood DA. The freshman weight gain phenomenon revisited. Nutr Rev. 2009 Feb;67(2):83-94.

Earlier studies associated the first year of college with a dramatic increase in body weight, termed the "freshman 15". However, recent studies showed that weight gain might be smaller. The purpose of this review was to evaluate the extent of observed weight/body composition changes, including factors associated with them, among students entering university. Searches were conducted for studies examining weight/body composition changes during freshman semesters. Most studies were not comprehensive in assessing numerous potential causative factors for weight gain. Methods for assessing diet, physical activity, and behavioral factors varied among studies. Weight changes were often not quantified by measures of body composition (lean/fat) to ascertain that changes were limited just to gains in fat mass. Overall, weight changes ranged from 0.7-3.1 kg, but among individuals who gained weight, the range was narrower, 3.1-3.4 kg. There may be specific groups of students with a greater predisposition for weight gain and future research should focus on identifying those groups.

Cluskey M, Grobe D. College weight gain and behavior transitions: male and female differences. J Am Diet Assoc. 2009 Feb;109(2):325-9.

College-student weight gain has been well-documented. However, little is known about the sex differences in weight gain and related behaviors during the transition to college. A repeated-measure study design was used to reveal measured weight changes from October to December 2005 among male and female college students. Three-hundred seventy-nine college students (60% males) participated in both weight assessments and revealed weight gains occurring early in college. Weight gains were found to be of greater incidence and magnitude among college males in the study. More than 25% of both college males and females gained >2.3 kg body weight in an 8-week period. Females starting the study with overweight and obese body mass index (calculated as kg/m(2)) scores were less likely to gain than either obese or overweight body mass index males or low to healthy body mass index students of both sexes. A life-course perspective was used to analyze focus group discussions conducted among students who participated in the weight assessments and explored their perceptions of the transition in eating and exercise behaviors when coming to college. Students described struggles in adapting healthful eating and exercise behaviors to college life. Comments indicated that while college student activity levels differed from the past, there was consistent agreement that eating healthful diets was perceived to be a greater challenge in the transition to college. Male students were less concerned about weight and used fewer strategies to control weight gain than females. More work is needed to understand the transition of behaviors and in developing healthful lifestyles during college.

Walsh JR, White AA, Greaney ML. Using focus groups to identify factors affecting healthy weight maintenance in college men. Nutr Res. 2009 Jun;29(6):371-8.

Healthful eating and physical activity are important for healthy weight maintenance. The hypothesis for this study was that college-aged men would perceive factors affecting eating and physical activity as both contributing to and inhibiting healthy weight maintenance. The overall objective was to explore how men view weight maintenance in the context of these aspects. Subjects (n = 47, mean age = 20.3 +/- 1.7 years) completed an online survey, including the 51-item Three-Factor Eating Questionnaire, and participated in 1 of 6 focus groups. Three face-to-face and 3 online synchronous groups were conducted using a 15-question discussion guide to identify weight maintenance issues around eating, physical activity, and body perceptions. Weight satisfaction decreased with increase in both dietary restraint and disinhibition. Number of attempts to lose weight was positively associated with BMI (r [44] = .465, P = .01) and dietary restraint (r [44] = .515, P = .01). Findings from both focus group formats were similar. Motivators (sports performance/fitness, self-esteem, attractiveness, long-term health) were similar for eating healthfully and being physically active; however, more motivators to be physically active than to eat healthfully emerged. Enablers for eating healthfully included liking the taste, availability of healthful foods, using food rules to guide intake, having a habit of healthful eating, and internal drive/will. Barriers to healthful eating included fat in dairy foods, fruit and vegetable taste, and quick spoilage. Barriers to being physically active included lack of time/time management, obligations, being lazy, and girlfriends. Results may be used to inform future obesity prevention interventions.