



## Nutrition Interventions

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### Abbreviated Abstract

Starting college is a time of transition where new habits are formed. Some students establish healthier habits than others in this transition. The Live Fit on Campus website was created to help students develop healthy eating and activity patterns during this transition from home to campus. In addition to providing students with behavior change tools and strategies, the website is customizable for student health service staff at each university to communicate campus specific health promotion resources such as local restaurants, workout facilities and wellness events. Because students are online for significant amounts of time and comfortable obtaining information from the Internet, a web program is likely to be successful in relaying health promotion messages. The site was tested in a randomized trial at four universities with 841 participants. Effectiveness of the site was evaluated based primarily on the consumption of fruits and vegetables and minutes of daily physical activity and secondarily on weight gain, self-efficacy, website satisfaction and cardiorespiratory fitness level measures.

### Primary Investigator

Mary Klein Buller, M.A.

Klein Buendel, Inc.

1667 Cole Blve, Suite 225

Golden, CO

(303) 565-4330

Fax: (303) 565-4320

[mbuller@kleinbuendel.com](mailto:mbuller@kleinbuendel.com)

Company Web Site: [www.kleinbuendel.com](http://www.kleinbuendel.com)

Product Web site: [www.livefitoncampus.org](http://www.livefitoncampus.org)

### Research Team & Affiliations

Klein Buendel, Inc.

- David Buller, PhD, (Co-Investigator, Health Communication Research)
- Andrea Dunn, PhD, (Co-Investigator, Physical Activity Research)
- Aimee Giese, BA, (Co-Investigator, Multimedia Design & Development)

Consultants

- Jamie Benedict, PhD, RD, University of Nevada, Reno (Nutrition Consultant)
- Karen Calfas, PhD, San Diego State University (Subcontractor, University Student Health Services)
- Gary Cutter, PhD, University of Alabama at Birmingham (Statistical Consultant)
- Robin Kolble, BSN, University of Colorado (Subcontractor, University Student Health Services)
- Deb Morris, BSN, Colorado State University (Subcontractor, University Student Health Services)
- Anita Stewart, PhD, University of California, San Francisco (Physical Activity Consultant)
- Gale Welter, MS, RD, University of Arizona (Subcontractor, University Student Health Services)
- Don Zimmerman, PhD, Colorado State University (Web Usability Consultant)

### Total Budget

\$1,859,798.00



## Research Objectives

### AIMS

- 1) Produce a multimedia web-based campus nutrition and physical activity education program for college students and Student Health Services staff;
- 2) Test the effectiveness of the program at increasing consumption of fruits and vegetables, increasing minutes of physical activity, and secondarily reducing weight gain by college students in a randomized trial with students at four universities.

## Theory/Hypothesis

Several theoretical frameworks guided the production of the web program including Social Cognitive Theory, the Transtheoretical Model, and Diffusion of Innovations Theory. The main hypothesis tested was that students who were assigned to use the Live Fit on Campus website would report consuming more fruits and vegetables and being more physically active. Secondary hypotheses included predicting that use of the website within the intervention condition would be positively associated with dietary and physical activity outcomes, and with weight control (i.e., less increase in BMI).

## Experimental Design

The project employed a pretest-posttest group randomized design with residence halls as the unit of randomization. Participants were consented, pretested and post tested. Those randomized to the intervention group were given access to the Live Fit on Campus website and were sent topical email newsletters monthly throughout an 8-month intervention period.

## Final Sample Size & Study Demographics

Eight hundred forty one (841) subjects from four universities were pretested at baseline. The sample was 52.20% female and 47.80% male. For ethnicity, 10.82% were Hispanic or Latino, 88.35% were not Hispanic or Latino, and 0.83% did not report ethnicity. For race, 1.31% were American Indian/Alaska Native, 4.16% were Asian, 0.36% were Native Hawaiian/Other Pacific Islander, 1.78% were Black or African American, 86.33% were White, and 0.95% were Other. In addition, 2.50% reported more than one race and 2.62% did not report race. Participants ranged in age from 18 to 20 years with 89.9% being 18 years old.

## Data Collection Methods

Participants were consented and pretested in person using a paper consent form and survey by trained study staff. Pulse, height and weight were also measured by study staff. Posttest measures were collected online using Inquisite® survey software. Follow-up pulse, height and weight measures were taken by trained Student Health Services staff at each university following a uniform protocol and using identical equipment.

## Outcome Measures

The primary outcomes were fruit and vegetable consumption and daily minutes of physical activity. Fruit and vegetable consumption was evaluated using a 14-item food frequency questionnaire and 1 self-report item for servings of fruits and vegetables. Physical activity was evaluated using the IPAQ survey and a newly developed questionnaire adapted from the CHAMPS questionnaire. Secondary measures included consumption of French fries/fried potatoes, weight gain, self-efficacy, website satisfaction and cardio-respiratory fitness level measures.



## Evaluation Methods

Outcomes were evaluated in two ways. First, students randomized to the Live Fit on Campus condition were compared to students in the no exposure control condition. Hierarchical cluster analysis was used to adjust for intra-class correlations among students within the same residence halls using PROC MIXED (for continuous variables) and PROC GENMOD (for dichotomous variables) in SAS. Pretest values on each outcome, demographics, time spent on the Web, and university were included as covariates. Second, within the Live Fit on Campus condition, the association between use of the website and the outcome measures were analyzed using regression procedures. Also, summary statistics were calculated for assessments of website satisfaction and association of satisfaction with the outcome measures were tested with regression procedures.

## Research Results

The site was highly appealing to users based on website satisfaction measures. Overall, intervention participants reported a lower consumption of French fries and fried potatoes than control participants. Use of the site was highly variable. Students who used the website more often reported an increase in vegetable consumption and an increase in cardio-respiratory fitness level. In addition, users who were most satisfied with the website displayed the most beneficial changes in diet and physical activity outcomes.

## Barriers & Solutions

It was necessary to change recruitment methods at the beginning of the project for a couple of reasons. Universities in general were not comfortable with Resident Assistants actively recruiting students and we were concerned with contamination within the residence halls. For this reason, project staff from Klein Buendel traveled to each university to recruit participants in person in residence hall lobbies or dining facilities.

## Product(s) Developed from This Research

Live Fit on Campus (<http://www.livefitoncampus.org>) can be used independently by students and administrators on a college campus or use can be facilitated by Resident Assistants or in wellness classes or seminars.