Final Progress Report for Research Projects Funded by Health Research Grants

Instructions: Please complete all of the items as instructed. Do not delete instructions. Do not leave any items blank; responses must be provided for all items. If your response to an item is "None", please specify "None" as your response. "Not applicable" is not an acceptable response for any of the items. There is no limit to the length of your response to any question. Responses should be single-spaced, no smaller than 12-point type. The report **must be completed using MS Word**. Submitted reports must be Word documents; they should not be converted to pdf format.

1. **Grantee Institution:** The Pennsylvania State University

2. **Reporting Period (start and end date of grant award period):** 1/1/2010 - 12/31/2013

3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** John Anthony, MPA

4. **Grant Contact Person's Telephone Number:** 814 935 1081

5. **Grant SAP Number:** 4100050904

6. **Project Number and Title of Research Project:** 35. Social Networking for Activity Promotion with Cell Phones (SNAP-C)

7. **Start and End Date of Research Project**: 9/1/2010 - 6/30/2012

8. **Name of Principal Investigator for the Research Project:** Liza S. Rovniak, PhD, MPH, and Jennifer Kraschnewski, MD, MPH

9. **Research Project Expenses**.

   9(A) Please provide the total amount of health research grant funds spent on this project for the entire duration of the grant, including indirect costs and any interest earned that was spent:

   $ 60,800

   9(B) Provide the last names (include first initial if multiple individuals with the same last name are listed) of **all** persons who worked on this research project and were supported with health research funds. Include position titles (Principal Investigator, Graduate Assistant, Post-doctoral Fellow, etc.), percent of effort on project and total health research funds expended for the position. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name, First Name	Position Title	% of Effort on Project	Cost
Francis, Erica	Research Assistant	3.2% Yr 1; 39.2% Yr 2	$1,068.80 $13,056.00
Kiser, Elizabeth	Research Assistant	4.8% Yr 2	$1,706.47
Breault, Corinna	Research Assistant	0.4% Yr 1	$122.40
Velott, Diana	Research Assistant	10.1% Yr 2	$6,765.00

9(C) Provide the names of **all** persons who worked on this research project, but who *were not* supported with health research funds. Include position titles (Research Assistant, Administrative Assistant, etc.) and percent of effort on project. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name, First Name	Position Title	% of Effort on Project
Rovniak, Liza	Principal Investigator	2.5% Yr 1 and Yr 2
Kraschnewski, Jennifer	Principal Investigator	2.5% Yr 1 and Yr 2

9(D) Provide a list of **all** scientific equipment purchased as part of this research grant, a short description of the value (benefit) derived by the institution from this equipment, and the cost of the equipment.

Type of Scientific Equipment	Value Derived	Cost
None		

10. Co-funding of Research Project during Health Research Grant Award Period. Did this research project receive funding from any other source during the project period when it was supported by the health research grant?

Yes_____ No____X_____

If yes, please indicate the source and amount of other funds:

11. Leveraging of Additional Funds

11(A) As a result of the health research funds provided for this research project, were you able to apply for and/or obtain funding from other sources to continue or expand the research?

Yes___X_____ No_____

If yes, please list the applications submitted (column A), the funding agency (National Institutes of Health—NIH, or other source in column B), the month and year when the application was submitted (column C), and the amount of funds requested (column D). If

you have received a notice that the grant will be funded, please indicate the amount of funds to be awarded (column E). If the grant was not funded, insert "not funded" in column E.

Do not include funding from your own institution or from CURE (tobacco settlement funds). Do not include grants submitted prior to the start date of the grant as shown in Question 2. If you list grants submitted within 1-6 months of the start date of this grant, add a statement below the table indicating how the data/results from this project were used to secure that grant.

A. Title of research project on grant application	B. Funding agency (check those that apply)	C. Month and Year Submitted	D. Amount of funds requested:	E. Amount of funds to be awarded:
Desk-Compatible Elliptical Device: Feasibility Evaluation (R21) PI: Liza Rovniak	▪**NIH** ☐ Other federal (specify:____) ☐ Nonfederal source (specify:__)	Initial: June 15, 2012 Resubmission: July 16, 2013	Total Costs: $420,749	We received a score in the 3rd percentile (fundable range). The final funding decision will be made at the council meeting in January, 2014
Behavioral Interventions to Address Multiple Chronic Health Conditions in Primary Care (R01) Role: Liza Rovniak and Jennifer Kraschnewski are Co-I's, Christopher Sciamanna is PI	▪**NIH** ☐ Other federal (specify:_____) ☐ Nonfederal source (specify:_)	Initial: February 5, 2013 Resubmission: Planned for February, 2014	Total Costs: $2,899,190	The initial proposal scored in the 21st percentile, with addressable weaknesses. The proposal is being resubmitted for February, 2014.
Enhanced School Strategy Public Health Actions to Prevent and control Diabetes, Heart Disease, Obesity and Associated Risk Factors	☐NIH ▪ Other federal (specify:_CDC_) ☐ Nonfederal source (specify:__)	Initial: June 1, 2013	Total costs: $1,266,552	Grant awarded, funding pending

and Promote School Health, Jennifer Kraschnewski, Co-I, Gail Snyder PI				
Enhanced Walking Strategy Public Health Actions to Prevent and control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health, Jennifer Kraschnewski, Co-I, Gail Snyder PI	☐NIH ▪ Other federal (specify:_CDC___) ☐ Nonfederal source (specify:__)	Initial: June 1, 2013	Total costs: $705,290	Grant awarded, funding pending

11(B) Are you planning to apply for additional funding in the future to continue or expand the research?

Yes___X_____ No_____

If yes, please describe your plans:

Based on the Dean's Feasibility project, Drs. Rovniak and Kraschnewski believe there is a need to obtain a better understanding of the processes by which social networks exert their effects on health behaviors such as physical activity. We plan to submit a grant to the NIH/NHLBI with the following tentative title for either the June or October, 2014 deadline: Social Networks for Activity Promotion: Mediating Mechanisms of Action.

12. Future of Research Project. What are the future plans for this research project?

We have collected extensive outcome and process evaluation data based on our research. We have multiple manuscripts based on this research in preparation, and we expect that these manuscripts will be submitted in the forthcoming year.

13. New Investigator Training and Development. Did students participate in project supported internships or graduate or post-graduate training for at least one semester or one summer?

Yes_____ No____X_____

If yes, how many students? Please specify in the tables below:

	Undergraduate	Masters	Pre-doc	Post-doc
Male				
Female				
Unknown				
Total				

	Undergraduate	Masters	Pre-doc	Post-doc
Hispanic				
Non-Hispanic				
Unknown				
Total				

	Undergraduate	Masters	Pre-doc	Post-doc
White				
Black				
Asian				
Other				
Unknown				
Total				

14. Recruitment of Out-of–State Researchers. Did you bring researchers into Pennsylvania to carry out this research project?

Yes_____ No_____X_____

If yes, please list the name and degree of each researcher and his/her previous affiliation:

15. Impact on Research Capacity and Quality. Did the health research project enhance the quality and/or capacity of research at your institution?

Yes___X_____ No_____

If yes, describe how improvements in infrastructure, the addition of new investigators, and other resources have led to more and better research.

Our research led to improved knowledge about how to engineer social networks. For instance, the conceptual model we developed on engineering social networks for physical activity/health promotion (Figure 1) was used to help guide Dr. Rovniak's assessments of the social environment in her pending (3rd percentile) NIH R21 proposal on integrating elliptical devices into workplace settings. This conceptual model will also be used to guide Drs. Rovniak's and Kraschnewski's future collaborative grant proposals and manuscripts on social networks for physical activity and health promotion.

16. Collaboration, business and community involvement.

16(A) Did the health research funds lead to collaboration with research partners outside of your institution (e.g., entire university, entire hospital system)?

Yes___X_____ No_____

If yes, please describe the collaborations:

Dr. Kraschnewski was able to capitalize upon the preliminary data obtained from the Dean's Feasibility project by submitting a collaborative (internal) CTSI grant (PI-Cynthia Chuang, Co-I Jennifer Kraschnewski) with partners on both Penn State research campuses, and by submitting two collaborative CDC grants (awarded) as Co-I with the Penn State Hershey Pro Wellness Center and multiple affiliated community partners outside of Penn State.

16(B) Did the research project result in commercial development of any research products?

Yes_____ No____X_____

If yes, please describe commercial development activities that resulted from the research project:

16(C) Did the research lead to new involvement with the community?

Yes_____ No___X_____

If yes, please describe involvement with community groups that resulted from the research project:

17. Progress in Achieving Research Goals, Objectives and Aims.

List the project goals, objectives and specific aims (as contained in the grant agreement). Summarize the progress made in achieving these goals, objectives and aims for the period that the project was funded (i.e., from project start date through end date). Indicate whether or not each goal/objective/aim was achieved; if something was not achieved, note the reasons why. Describe the methods used. If changes were made to the research goals/objectives/aims, methods, design or timeline since the original grant application was submitted, please describe the changes. Provide detailed results of the project. Include evidence of the data that was generated and analyzed, and provide tables, graphs, and figures of the data. List published abstracts, poster presentations and scientific meeting presentations at the end of the summary of progress; peer-reviewed publications should be listed under item 20.

This response should be a DETAILED report of the methods and findings. It is not sufficient

to state that the work was completed. Insufficient information may result in an unfavorable performance review, which may jeopardize future funding. If research findings are pending publication you must still include enough detail for the expert peer reviewers to evaluate the progress during the course of the project.

Health research grants funded under the Tobacco Settlement Act will be evaluated via a performance review by an expert panel of researchers and clinicians who will assess project work using this Final Progress Report, all project Annual Reports and the project's strategic plan. After the final performance review of each project is complete, approximately 12-16 months after the end of the grant, this Final Progress Report, as well as the Final Performance Review Report containing the comments of the expert review panel, and the grantee's written response to the Final Performance Review Report, will be posted on the CURE Web site.

There is no limit to the length of your response. Responses must be single-spaced below, no smaller than 12-point type. If you cut and paste text from a publication, be sure symbols print properly, e.g., the Greek symbol for alpha (α) and beta (ß) should not print as boxes (□) and include the appropriate citation(s). DO NOT DELETE THESE INSTRUCTIONS.

Our project is a randomized controlled trial based on the Social Networks for Activity Promotion (SNAP) model (Figure 1) to evaluate the efficacy of using cell phones to build social networks for physical activity (PA). Engineering supportive social networks for PA could increase longer-term maintenance of PA and prevent the decline in PA that typically occurs after interventions end. However, little research has explored how to engineer social networks to increase opportunities for PA.

Cell-phones hold potential to expand social networks for PA because they are widely used and can provide portable interventions with real-time social cues and reinforcement for PA. The use of cell-phones for promoting PA remains underexplored relative to other intervention modalities. We proposed to add a cell phone intervention arm to a prior-funded K99/R00 randomized controlled trial that was being conducted to evaluate the effectiveness of an email and web-based intervention to build social networks for PA. The primary specific aims of the cell-phone based intervention arm were to:

1. Compare the effects of a cell phone-based social networking intervention for PA (Social Networking for Activity Promotion with Cell Phones: SNAP-C) to a minimal treatment control group (Usual Care) on change in: aerobic fitness, step counts, blood pressure, body mass index (BMI), and self-reported moderate and vigorous PA from baseline to post-test.
2. Evaluate the moderator effects of selected individual-level self-management skills (goal setting, planning, self-monitoring), ecological variables (number of social networks and activity partners for PA/walking, built environment characteristics, and neighborhood walkability) on treatment group outcomes.
3. Conduct a process evaluation of SNAP-C (recruitment rates, intervention delivery and treatment fidelity, participation rate) to inform the feasibility of future cell-phone interventions and refinements to intervention procedures.

Methods

Design: We conducted a randomized controlled trial to evaluate the effectiveness of a cell-phone based intervention to promote physical activity relative to an attention control group (emphasizing good nutrition). The study included 86 participants who were age and gender-matched prior to randomization to either an 8-week physical activity group or the attention control group. The physical activity intervention consisted of cell phone-based messaging and access to a cell phone-based private social networking site focused on physical activity. The attention control group consisted of similar procedures focused on good nutrition. In-person assessments of outcomes were conducted at baseline and post-program (8 weeks). Following randomization, participants participated in a single introductory face-to-face meeting for their respective group to obtain an orientation to the program activities. The physical activity group received a pedometer, a brief fitness walking and stretching demonstration with advice on injury prevention, and instruction in the use of the program's online social networking site. The attention control group was given a recipe book and samples of healthy food, and instruction in the use of an online social networking site for nutrition.

Modification to original study design: The original study design proposed to use a minimal treatment control group from Dr. Rovniak's ongoing NIH-funded intervention. However, the University's Institutional Review Board (IRB) raised concerns that made it impossible to retain the original study design. The primary IRB concern was that participants who had been recruited for Dr. Rovniak's NIH intervention would need to be informed of all study procedures for the current project (SNAP-C) at the time of recruitment. Since many participants had already been recruited for the NIH project, it was not possible to inform them of the SNAP-C procedures at the time of recruitment. Therefore, in addition to recruiting the targeted number of participants for the physical activity arm, we recruited additional participants for an attention-control nutrition group. We decided to use an attention-control nutrition group as: (1) change in nutrition is not expected to impact physical activity outcomes; and (2) there are numerous funding opportunities for combined nutrition/physical activity programs and pilot data would be valuable for future grant proposals.

Additionally, at the onset of the study, the cost of conducting aerobic fitness assessments via a treadmill test doubled in cost from the initial amount that was quoted to us and budgeted in our grant proposal. Given the scope of grant funds, we were forced to drop plans to include a measure of aerobic fitness for this pilot study, but we administered all other planned measures.

Participants: Inclusion criteria were: ages 25-64, sedentary, English-speaking, able to participate in moderate-intensity physical activity, ownership of a smart phone (i.e., iPhone, Blackberry, Android), and home computer with Internet access. Exclusion criteria were: body mass index (BMI) greater than 39.9, consumption of 5 or more drinks of alcohol/day, current pregnancy, and living outside of the preselected study neighborhoods. Participants were recruited through community settings, direct mailings, newspaper ads, and recruitment materials posted at an academic medical center. Participants were compensated for their participation.

Intervention:

Physical Activity Group: The physical activity group intervention provided access to a private social networking website and encouragement to start a moderate intensity walking program. Participants were asked to walk 4000 steps *specifically for exercise* per day (on top of their usual

step count), 5 times per week, and to record their step counts daily using the free pedometer provided to them. Each week, participants in the physical activity group were also asked to engage in social activities using a confidential online social networking site (e.g., posting/joining physical activity events, participating on discussion boards, sharing photos, inviting family members/friends to join the site) to build support for walking and physical activity. Once per week, participants were asked to report the number of pedometer steps they took, as well as their body weight through a secure, mobile-phone based survey, and received prompt, individually tailored feedback on how their step counts compared to others in the program, and to national physical activity recommendations. Participants also reported the number and types of social activities they had engaged in to build social support for their physical activity. Participants were asked to use their cell phones for all study activities to encourage portable prompts and feedback for physical activity.

Attention Control Nutrition Group: The nutrition group intervention was provided access to a private social networking website and encouragement to obtain guideline-concordant fruit and vegetable intake daily. Participants were asked to eat 5 or more servings of fruits and vegetables per day, and to try to cook healthy recipes on most days of the week. Additionally, they were encouraged to engage in social activities through a private social networking site (e.g., posting/joining healthy eating events, participating on discussion boards, sharing photos, inviting family members/friends to join the site) to build support for healthy eating. Each week participants in the nutrition group completed a mobile-phone-based survey reporting the number of fruits and vegetables they ate, as well as their body weight, and received feedback on how their fruit/vegetable intake compared to others in the program, and to national recommendations for fruit and vegetable intake. They also reported the number and types of social activities they had engaged in to build social support for healthy eating. As with the physical activity group, they were asked to use their cell phones for program activities.

Both Groups: Both the physical activity and the attention-control nutrition group used the Facebook Secret Groups option (www.facebook.com/groups) to protect confidentiality. The Facebook "secret groups" site operates similarly to more public versions of Facebook, but it is more private because it is not publicly available and cannot be found in online searches.

Measures:
Objective measures: BMI was calculated from height and weight as kilograms per square meters. Height (without shoes) was measured using a stadiometer (Seca 213). Weight was measured using a calibrated digital scale (Tanita BF-683W). Weight circumference was measured with a Gulick tape measure. Arterial blood pressure and heart rate were measured by a blood pressure cuff on the upper arm (Omron HEM 907XL).

Self report measures—Physical Activity: Self-reported walking was assessed with the National Health Interview Survey. The International Physical Activity Questionnaire was used to assess frequency and duration of moderate- and vigorous-intensity physical activities. The Neighborhood Environment Walkability Scale, and a home/community physical activity facilities checklist was used to assess built environmental support for physical activity. Social Ecological measures were also administered, including measures of participants' social support

and social networks for physical activity.

Self report measures—Nutrition: The 2005 Block Food Frequency Questionnaire was used to measure nutritional intake. The Neighborhood Nutrition Environment scale was used to measure food availability in the participants' neighborhood, and the Nutritional Home Environment scale was used to measure the availability of health food in the home. Social support and social network measures of healthy eating were also administered.

Process Evaluation: Post-program process evaluation administered to both groups included assessment of participants' receipt of intervention components and satisfaction with different aspects of the program. Intervention fidelity was monitored by recording the number of participants engaged in different components of the program.

Statistical Analysis: Means and standard deviations were used to summarize continuous variables, and percentages were used to summarize categorical variables. Comparisons of demographics at baseline were made between intervention groups using Chi-square and t- tests, as appropriate. A change score was computed for each outcome by subtracting the baseline measurement from the posttest measurement. ANCOVA was used to compare study groups, adjusted for baseline values on outcome measures.

Results/Achievements

We have successfully merged multiple data files and edited and cleaned data from all participants (N=86), both at baseline and post-program, including measures of demographics, physical activity, nutrition, and social networking. In addition, we have outlined our intended manuscripts, begun preliminary data analyses, and submitted three manuscripts for review, of which two were published (see publication details in question #20 below). Data analyses are still ongoing, and we anticipate submitting multiple additional manuscripts in the forthcoming year.

To assist with planned manuscripts, an extensive literature review was conducted of Internet-based, cell-phone compatible lifestyle modification interventions that used social networking intervention strategies. Twenty-eight studies were abstracted. We coded 11 study features of these studies, including study population, design, intervention, eligibility, technological components, adherence and attrition, primary and secondary outcomes, and participant incentives expressly used to increase social or site interaction. Of the abstracted studies, 18 matched the criterion of using social networking to engage participants. Only one of the 18, however, asked participants to use their cell phones to socially network with other participants. Therefore, our research will make a unique contribution to the literature.

As part of our literature review, we also extensively reviewed prior efforts to engineer social networks for physical activity across multiple settings. As there is limited literature to provide guidance for engineering social networks for health promotion, we synthesized existing literature and developed a conceptual model of social networks (Figure 1, and publication 1 in question 20 below). We plan to test and refine this model in our future manuscripts and grant proposals.

Baseline Characteristics and Attrition: Of the 127 participants screened for eligibility, 22 were ineligible to participate, 18 did not attend the baseline visit, and 87 were randomized (Figure 2).

Most participants were women, white, middle-aged, and obese. No significant differences were observed between groups at baseline, suggesting successful random assignment (Table 1). Of participants enrolled at baseline, 88% completed the post-program assessment.

Physical Activity and Health Outcomes: Table 2 summarizes changes in physical activity and health outcomes from baseline to post-program. The physical activity group reported a greater change in leisure-time physical activity than the nutrition group, which was equivalent to a difference of 85 MET-minutes per week, or approximately one 30-minute walk per week at a moderate pace. The nutrition group demonstrated greater improvement in diastolic blood pressure than the physical activity group. There were no significant differences between groups in changes in body weight, waist circumference, and systolic blood pressure.

Program Engagement: Participants were actively engaged in the study's website (Table 3). Almost two-thirds of participants participated in a discussion on the study's Facebook page at least every other week. Participants also posted an average of two events over the course of the program; suggesting that the intervention served as a means of increasing social opportunities for physical activity and healthy eating. The largest majority of participants contributed to the Facebook-based social networking activities during the evening and lunchtime hours (Figure 3). The program received excellent reviews from participants, with almost all participants (92.2%) stating that they would recommend our program to other people (Table 4).

Conference Presentations: Initial results of our research were presented at the Society of General Internal Medicine national and regional meetings. At the national meeting, the research was selected for a prestigious plenary presentation, and was delivered to a large audience of medical and public health professionals. The citations for these two presentations are listed below. We plan to submit additional collaborative conference presentations in the forthcoming year.

Kraschnewski JL, Rovniak LS, George DR, Francis E, Sciamanna CN. "Friending" Physical Activity: Results from the Social Networking for Activity Promotion with Cell Phones (SNAP-C) Study. Plenary presentation at the Society of General Internal Medicine National Meeting, Denver, CO, April 2013.

Kraschnewski JL, Rovniak LS, George DR, Francis E, Sciamanna CN. "Friending" Physical Activity: Results from the Social Networking for Activity Promotion with Cell Phones (SNAP-C) Study. Poster presention, Society of General Internal Medicine Regional Meeting, Philadelphia, PA, March 2013.

Figure 1. Social Networks for Activity Promotion (SNAP) Model

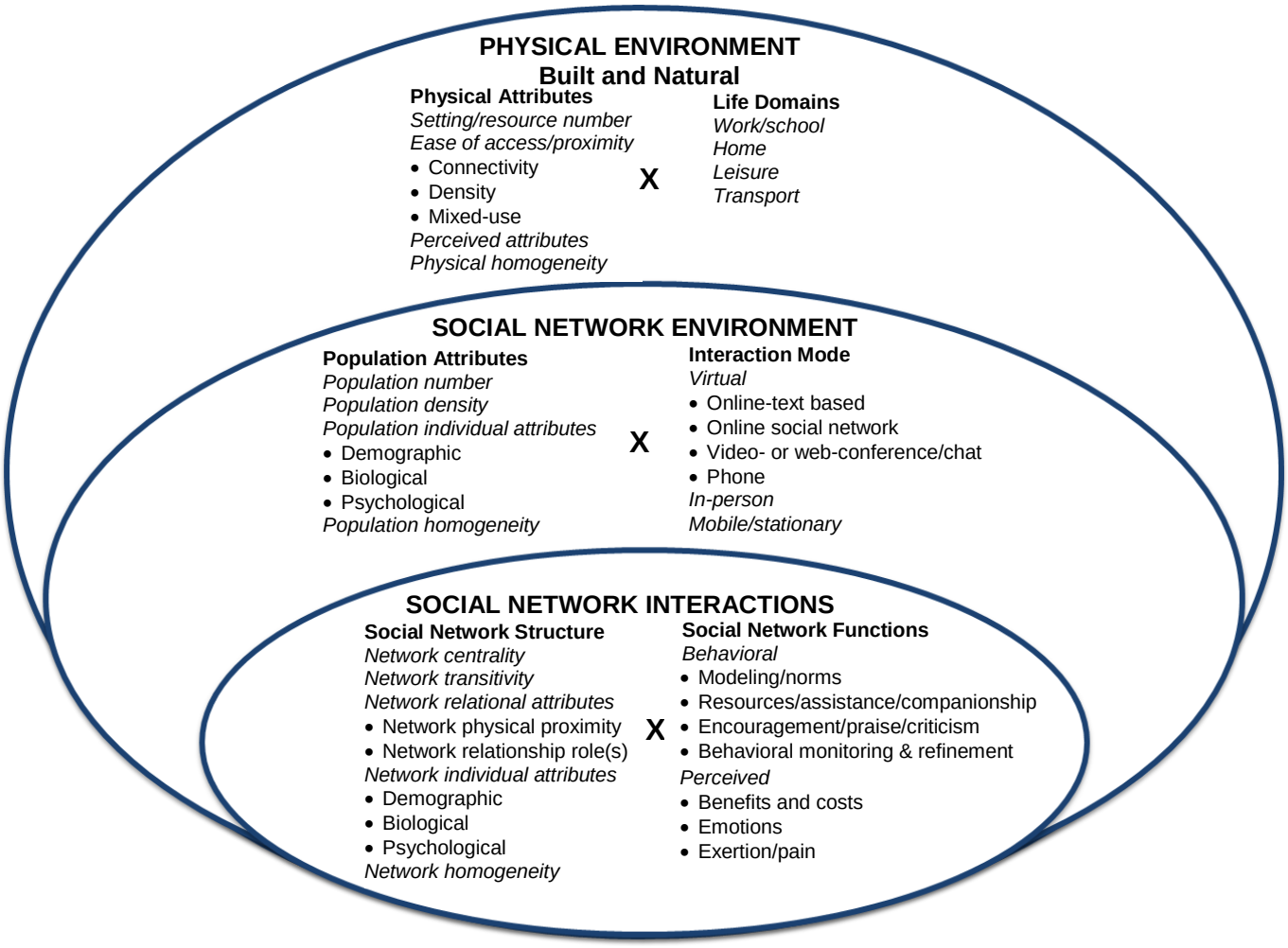


Figure 2. CONSORT Diagram of Participant Flow

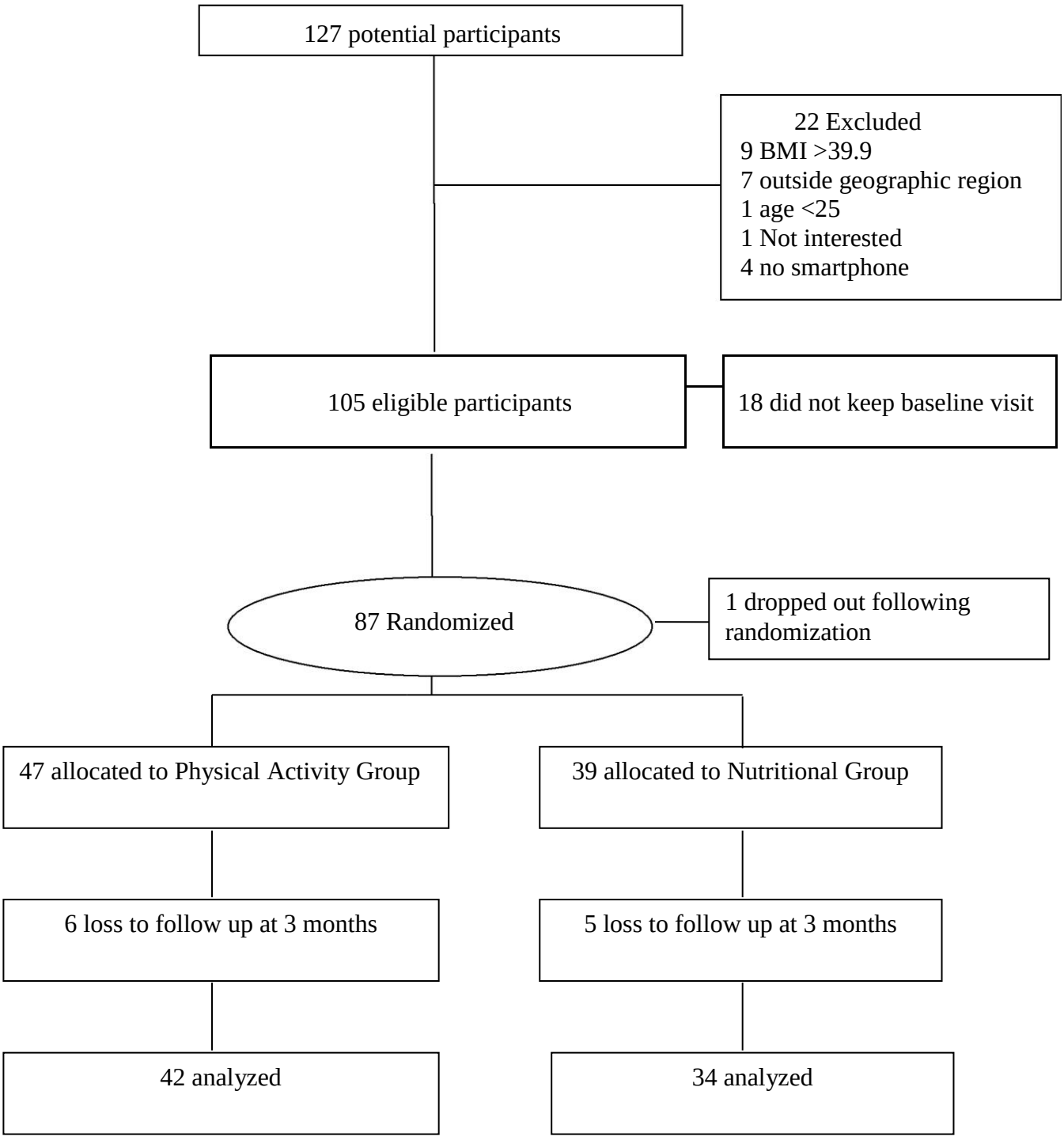


Table 1. Baseline Characteristics of Physical Activity vs. Nutrition (Attention Control) Participants, n (%) unless otherwise indicated.

Participant Characteristics	Overall (n=86)	Physical Activity Group (n=47)	Nutrition Group (n=39)	*P*-value
Age, years (M±SD)	43.9±9.9	44.2±11.2	43.4±8.2	0.7
Gender – Female	74.4	76.6	71.8	0.6
Race – White	88.4	87.2	89.7	0.8
High school education or less	16.3	12.8	20.5	0.3
Marital status – Married	77.9	76.6	79.5	0.8
Current weight, lb (M±SD)	198.8±40.5	199.7±40.9	197.6±40.5	0.8
BMI, kg/m2 (M±SD)	31.7±4.6	31.9±4.8	31.5±4.4	0.7

BMI = body mass index;
(M±SD) = Mean±Standard Deviation.

Table 2. Changes in Physical Activity and Health Outcomes among Study Participants from Baseline to Post (N=86).

Outcomes	Physical Activity Group (n=47)	Nutrition Group (n=39)	*P*-value
Change in leisure-time physical activity (MET-minutes/week)	30.7 ± 135.7	-54.5±199.6	.03
Change in weight (lbs)	-0.4±4.6	-1.4±4.0	.33
Change in waist circumference (centimeters)	-2.1±5.3	-1.6±4.1	.65
Change in systolic blood pressure (mmHg)	-1.5±11.3	-3.3±14.0	.54
Change in diastolic blood pressure (mmHg)	3.7±9.7	-3.3±8.8	.002

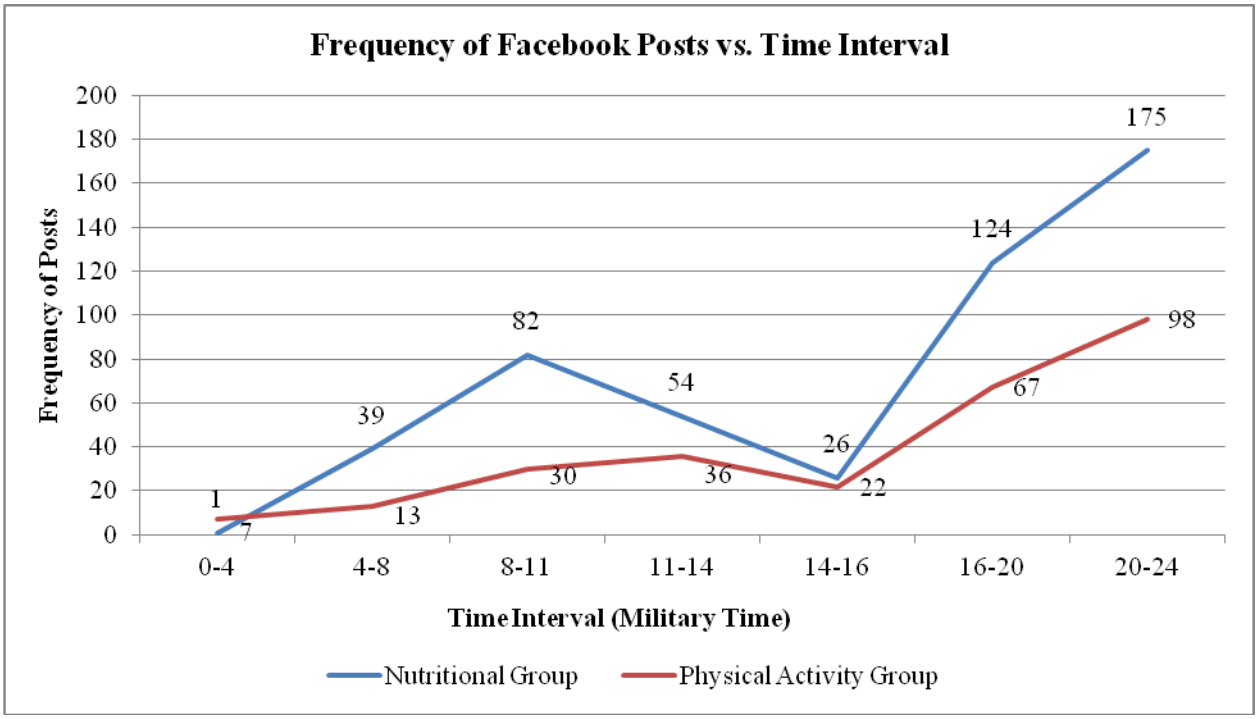
Table 3. Facebook Use During Program by Study Participants (N=86).

Facebook Use	
% Participated in a discussion at least every other week	62.8%
Mean number of times participated in a discussion (SD)	13.1 (15.1)
Mean number of health events posted (SD)	2.0 (3.5)

Table 4. Post-Program Evaluation by Study Participants (N=77).

Post-Program Measure	% of Participants who "Agreed" or "Totally Agreed"
"Overall, I enjoyed participating in this program."	84.4
"Overall, I feel I benefited from this program."	79.2
"I would recommend this program to other people."	92.2

Figure 3. Time-Related Patterns of Participation on Facebook Physical Activity and Nutrition Sites



18. Extent of Clinical Activities Initiated and Completed. Items 18(A) and 18(B) should be completed for all research projects. If the project was restricted to secondary analysis of clinical data or data analysis of clinical research, then responses to 18(A) and 18(B) should be "No."

18(A) Did you initiate a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

___X_ Yes
_____No

18(B) Did you complete a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

__X__ Yes
_____No

If "Yes" to either 18(A) or 18(B), items 18(C) – (F) must also be completed. (Do NOT complete 18(C-F) if 18(A) and 18(B) are both "No.")

18(C) How many hospital and health care professionals were involved in the research project?

___0___Number of hospital and health care professionals involved in the research project

18(D) How many subjects were included in the study compared to targeted goals?

__100 Number of subjects originally targeted to be included in the study
___86 Number of subjects enrolled in the study

Note: Studies that fall dramatically short on recruitment are encouraged to provide the details of their recruitment efforts in Item 17, Progress in Achieving Research Goals, Objectives and Aims. For example, the number of eligible subjects approached, the number that refused to participate and the reasons for refusal. Without this information it is difficult to discern whether eligibility criteria were too restrictive or the study simply did not appeal to subjects.

18(E) How many subjects were enrolled in the study by gender, ethnicity and race?

Gender:
__22__Males
__64__Females
_____Unknown

Ethnicity:
____4_Latinos or Hispanics
___82_Not Latinos or Hispanics
_____Unknown

Race:
_____American Indian or Alaska Native
__6__Asian
__1__Black or African American
_____Native Hawaiian or Other Pacific Islander
__76__White
__3__Other, specify: Mixed-race
_____Unknown

18(F) Where was the research study conducted? (List the county where the research study was conducted. If the treatment, prevention and diagnostic tests were offered in more than one county, list all of the counties where the research study was conducted.)

The study was conducted in Dauphin County, Pennsylvania.

19. Human Embryonic Stem Cell Research. Item 19(A) should be completed for all research projects. If the research project involved human embryonic stem cells, items 19(B) and 19(C) must also be completed.

19(A) Did this project involve, in any capacity, human embryonic stem cells?
_____Yes
__X__ No

19(B) Were these stem cell lines NIH-approved lines that were derived outside of Pennsylvania?
_____Yes
_____ No

19(C) Please describe how this project involved human embryonic stem cells:

20. Articles Submitted to Peer-Reviewed Publications.

20(A) Identify all publications that resulted from the research performed during the funding period and that have been submitted to peer-reviewed publications. Do not list journal abstracts or presentations at professional meetings; abstract and meeting presentations should be listed at the end of item 17. **Include only those publications that acknowledge the Pennsylvania Department of Health as a funding source** (as required in the grant agreement). List the title of the journal article, the authors, the name of the peer-reviewed publication, the month and year when it was submitted, and the status of publication (submitted for publication, accepted for publication or published.). Submit an electronic copy of each publication or paper submitted for publication, listed in the table, in a PDF version 5.0.5 (or greater) format, 1,200 dpi. Filenames for each publication should include the number of the research project, the last name of the PI, and an abbreviated title of the

publication. For example, if you submit two publications for Smith (PI for Project 01), one publication for Zhang (PI for Project 03), and one publication for Bates (PI for Project 04), the filenames would be:

Project 01 – Smith – Three cases of isolated
Project 01 – Smith – Investigation of NEB1 deletions
Project 03 – Zhang – Molecular profiling of aromatase
Project 04 – Bates – Neonatal intensive care

If the publication is not available electronically, provide 5 paper copies of the publication.

Note: The grant agreement requires that recipients acknowledge the Pennsylvania Department of Health funding in all publications. Please ensure that all publications listed acknowledge the Department of Health funding. If a publication does not acknowledge the funding from the Commonwealth, do not list the publication.

Title of Journal Article:	Authors:	Name of Peer-reviewed Publication:	Month and Year Submitted:	Publication Status (check appropriate box below):
1. Engineering online and in-person social networks to sustain physical activity: Application of a conceptual model.	Rovniak LS, Sallis JF, Kraschnewski JL, Sciamanna CN, Kiser EJ, Ray CA, Chinchilli V, Ding D, Matthews SA, Bopp M, George DR, Hovell MF.	BMC Public Health	July, 2013	☐Submitted ☐Accepted ▪**Published**
2. Dangers and opportunities for social media in medicine.	George, DR, Rovniak LS, Kraschnewski, JL.	Clinical Obstetrics and Gynecology	Feb, 2012	☐Submitted ☐Accepted ▪**Published**

20(B) Based on this project, are you planning to submit articles to peer-reviewed publications in the future?

Yes____X_____ No_____

If yes, please describe your plans:

In addition to the research we have published, we have multiple manuscripts that are currently in preparation based on our social networking intervention. We plan to submit these additional manuscripts within the forthcoming year.

21. Changes in Outcome, Impact and Effectiveness Attributable to the Research Project.
Describe the outcome, impact, and effectiveness of the research project by summarizing its impact on the incidence of disease, death from disease, stage of disease at time of diagnosis, or other relevant measures of outcome, impact or effectiveness of the research project. If

there were no changes, insert "None"; do not use "Not applicable." Responses must be single-spaced below, and no smaller than 12-point type. DO NOT DELETE THESE INSTRUCTIONS. There is no limit to the length of your response.

The research project provided preliminary evidence that a social networking intervention can positively alter health risk factors such as physical activity and blood pressure. Evaluating the effect of the social network intervention on longer-term health outcomes will require studies with funding for longer-term follow-ups. The pilot data collected as part of this study has already enabled us to submit several grants to further explore effects of similar interventions on long-term health outcomes, and more grant proposals are in preparation.

22. Major Discoveries, New Drugs, and New Approaches for Prevention Diagnosis and Treatment. Describe major discoveries, new drugs, and new approaches for prevention, diagnosis and treatment that are attributable to the completed research project. If there were no major discoveries, drugs or approaches, insert "None"; do not use "Not applicable." Responses must be single-spaced below, and no smaller than 12-point type. DO NOT DELETE THESE INSTRUCTIONS. There is no limit to the length of your response.

None.

23. Inventions, Patents and Commercial Development Opportunities.

23(A) Were any inventions, which may be patentable or otherwise protectable under Title 35 of the United States Code, conceived or first actually reduced to practice in the performance of work under this health research grant? Yes_____ No___X____

If "Yes" to 23(A), complete items a – g below for each invention. (Do NOT complete items a - g if 23(A) is "No.")

a. Title of Invention:

b. Name of Inventor(s):

c. Technical Description of Invention (describe nature, purpose, operation and physical, chemical, biological or electrical characteristics of the invention):

d. Was a patent filed for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?
Yes_____ No___

If yes, indicate date patent was filed:

e. Was a patent issued for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?

Yes_____ No____
If yes, indicate number of patent, title and date issued:
Patent number:
Title of patent:
Date issued:

f. Were any licenses granted for the patent obtained as a result of work performed under this health research grant? Yes_____ No____

If yes, how many licenses were granted?_____

g. Were any commercial development activities taken to develop the invention into a commercial product or service for manufacture or sale? Yes___ No____

If yes, describe the commercial development activities:

23(B) Based on the results of this project, are you planning to file for any licenses or patents, or undertake any commercial development opportunities in the future?

Yes_____ No___X_____

If yes, please describe your plans:

24. Key Investigator Qualifications. Briefly describe the education, research interests and experience and professional commitments of the Principal Investigator and all other key investigators. In place of narrative you may insert the NIH biosketch form here; however, please limit each biosketch to 1-2 pages.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Rovniak, Liza S.	Assistant Professor of Medicine and Public Health Sciences
eRA COMMONS USER NAME (credential, e.g., agency login) LROVNIAK	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
McGill University, Montreal, Quebec	B.A.	10/96	Psychology
Virginia Tech, Blacksburg, VA	M.S.	05/99	Clinical Psychology
Virginia Tech, Blacksburg, VA	Ph.D.	05/03	Clinical Psychology
San Diego State University, San Diego, CA	MPH	05/08	Public Health

A. Personal Statement

My research focuses on improving the quality and effectiveness of health behavior change interventions, with an emphasis on physical activity promotion and obesity prevention. Common themes that guide my research include increasing intervention sustainability, using technology to foster widespread dissemination of interventions, and improving fidelity to behavioral science theory to enable progressive refinements to interventions and theory. Over the last ten years, I have been PI on 4 NIH and state-funded grants, and have obtained over $1 million in external funding to conduct health behavior change interventions for physical activity, diet, and other health-risk behaviors. I also teach a graduate course in Penn State's MPH program on Public Health Program Planning and Evaluation. My experience over the last ten years conducting community-based research, and my training in behavioral science and population-level public health and ecological models positions me to serve as Principal Investigator on the proposed project.

B. Positions and Honors

Positions and Employment

7/2003-6/2009	Postdoctoral Scientist and Adjunct Assistant Professor, Center for Behavioral Epidemiology and Community Health, Graduate School of Public Health, San Diego State University
7/2009-present	Affiliate Faculty member, Center for Nutrition and Activity Promotion, Department of Public Health Sciences, Penn State College of Medicine, Hershey, PA
7/2009-present	Assistant Professor, Division of General Internal Medicine and Department of Public Health Sciences, Penn State College of Medicine, Hershey, PA
2/2011-present	Member, Penn State Hershey Medical Center Wellness Advisory Board
5/2012-present	Associate Director, Center for Occupational Safety, Health, Wellness, and Ergonomics

Other Experience

2004-2005	Grant reviewer and coordinator, University of Texas Health Science Center grant program
2006	Invited speaker, County of San Diego Tobacco Control Coalition
2007	Grant reviewer, Centers for Disease Control, Health Promotion and Disease Prevention Research Centers: Peer Review Meeting on Built Environment and Physical Activity
2010	Invited speaker, Population Health Sciences Seminar, University of Wisconsin, Madison
2010	Invited speaker, 6th Annual Public Forum: Reducing Cancer in our Community, Penn State
2010-2011	Team Leader: Social & Behavioral Science Working Group for Penn State MPH Program
2011	Grant reviewer, National Institutes of Health, Social Networks and Health Meeting
2011	Course Co-Director: Basic Statistics Training Course for Medical Faculty Members
2012	Invited speaker, Industrial Engineering Distinguished Lecture Series, Penn State
2012-present	Course Director, Public Health Program Planning and Evaluation, Penn State

C. Selected Peer-reviewed Publications

Most relevant to the current application (in chronological order)

1. **Rovniak LS**, Anderson ES, Winett RA, Stephens RS. Social-cognitive determinants of physical activity in young adults: a prospective structural equation analysis. *Ann Behav Med*. 2002;24(2):149-156.
2. **Rovniak LS**, Hovell MF, Wojcik JR, Winett RA, Martinez-Donate AP. Enhancing theoretical fidelity: an e-mail-based walking program demonstration. *Am J Health Promot*. 2005;20(2):85-95.
3. **Rovniak LS**, Sallis JF, Saelens BE, Frank LD, Marshall SJ, Norman GJ, Conway TF, Cain KL, Hovell MF. Physical activity patterns across life domains: cluster analysis with replication. *Health Psychol.* 2010;29(5):496-505. PMCID: PMC3021982
4. Kraschnewski JL, Stuckey HL, **Rovniak LS**, Lehman EB, Boan J, Nezu AM, Coups E, Sciamanna CN. Effects of a user-generated content-based website for weight control: A randomized controlled trial. *Am J Prev Med.* 2011:41(6):610-614. NIHMSID: NIHM386061
5. **Rovniak LS**, Sallis JF, Kraschnewski JL, Sciamanna CN, Kiser EJ, Ray CA, Chinchilli V, Ding D, Matthews SA, Bopp M, George DR, Hovell MF. Engineering online and in-person social networks to sustain physical activity: Application of a conceptual model. *BMC Public Health* 2013; 13(1):753. PMCID: PMC Journal – In process.
6. **Rovniak LS**, Denlinger L, Duveneck E, Sciamanna CN, Kong L, Freivalds A, Ray CA. Feasibility of using a compact elliptical device to increase energy expenditure during sedentary activities, *In press, Journal of Science and Medicine in Sport.* PMCID: PMC Journal – In Process.

Additional recent publications of importance to the field (in chronological order)

7. Spence JC, Plotnikoff RC, **Rovniak LS**, Martin K, Rodgers W, Lear SA. Perceived neighbourhood correlates of walking among participants visiting the Canada on the Move website. *Can J Public Health*. 2006;97(Suppl 1):S36-S40; S39-44.
8. Plotnikoff RC, Spence JC, Tavares L, **Rovniak LS**, Bauman A, Lear S, McCargar L. Characteristics of participants visiting the Canada on the move website. *Can J Public Health*. 2006;97(Suppl 1):S28-S35; S30-8.
9. **Rovniak LS**, Johnson-Kozlow MF, Hovell MF. Reducing the gap between the economic costs of tobacco and funds for tobacco training in schools of public health. *Public Health Rep*. 2006;121(5):538-546. PMCID: PMC1564463
10. Johnson-Kozlow MF, Hovell MF, **Rovniak LS**, Wahlgren DR, Zakarian JM. Fidelity issues in secondhand smoking interventions for children. *Nicotine Tob Res*. 2008;10(12):1677-1690.
11. **Rovniak LS**, Hovell MF, Hofstetter CR, Blumberg EJ, Sipan CL, Batista MF, Martinez-Donate AP, Mulvihill MM, Ayala, GX. Engaging community businesses in human immunodeficiency virus prevention: a feasibility study. *Am J Health Promot.* 2010;24(5):347-353. PMCID: PMC2871324
12. George DR, Kraschnewski JL, **Rovniak LS**. Public health potential of farmers' markets on medical center campuses: a case study from Penn State Hershey Medical center. *Am J Public Health.* 2011:101(12):2226-2232. NIHMSID: NIHM386059
13. George DR, **Rovniak LS**, Kraschnewski JL. Dangers and opportunities for social media in medicine. *Clinical Obstetrics and Gynecology* 2013; 56(3):453-62. NIHMSID: NIHMS536304
14. George, DR, **Rovniak LS**, Kraschnewski, JL, Morrison, K, Dillon, J, Bates, B. Medical center famers' markets: A strategic partner in the patient-centered medical home. *Preventing Chronic Disease* 2013; 10:E127 doi: 10.5888/pcd10.130105. PMCID: PMC3733477
15. Hovell MF, Adams MA, Hofstetter CR, Martinez-Donate AP, Gonzalez-Perez GJ, **Rovniak LS**, Boman MC. Anti Complete home smoking bans and anti-tobacco contingencies: A natural experiment. *In press, Nicotine & Tobacco Research.* PMCID: PMC Journal – In Process.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors

NAME	POSITION TITLE
Jennifer L. Kraschnewski, MD MPH	Assistant Professor, Medicine and Public Health Sciences
eRA COMMONS USER NAME jlkraschnewski	

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Wisconsin, Madison, WI	B.S.	05/01	Medical Sciences
University of Wisconsin, Madison, WI	M.D.	05/04	Medicine
Duke University Medical Center, Durham, NC		04/07	Internal Medicine
University of North Carolina, Chapel Hill, NC	M.P.H.	05/09	Research Fellowship

A. Personal Statement.

Dr. Jennifer Kraschnewski is an Assistant Professor of Medicine and Public Health Sciences who joined the faculty at the Penn State College of Medicine in July 2009. She completed her medical degree at the University of Wisconsin and her Internal Medicine Residency at Duke University Medical Center. Following completion of her medical training, she was an NRSA fellow in Primary Care Research at the University of North Carolina at Chapel Hill. She additionally earned a Master of Public Health at the University of North Carolina Gillings School of Public Health, with a thesis examining the role of community health workers in public health promotion and disease prevention. She is a clinician-investigator with a research focus on behavioral interventions for weight control in the primary care setting. She has over 25 peer-reviewed publications and her research has been presented at both the regional and national levels. Dr. Kraschnewski also serves as the Medical Director of Research for the Penn State Hershey Pro Wellness Center, which is committed to educating and inspiring youth and families to eat well, engage in regular physical activity, and become champions for bringing healthy choices to life. In addition to her research, she teaches internal medicine resident physicians and medical students in both the hospital and clinical settings.

B. Research and/or Professional Experience.

Employment

2004-2007	Intern/Resident, Internal Medicine Residency, Duke University Medical Center, Durham, NC
2007-2009	National Research Service Award Primary Care Research Fellowship (NRSA), University of North Carolina, Chapel Hill, NC
2007-2009	K30 Clinical Research Training Program, University of North Carolina School of Medicine, Chapel Hill, NC
2007-2009	Teaching Fellow, Division of General Internal Medicine, Department of Medicine, University of North Carolina, Chapel Hill, NC
2008	Adjunct Faculty Instructor, University of North Carolina School of Medicine, Chapel Hill, NC
2009-present	Assistant Professor, Division of General Internal Medicine, Department of Medicine, and Division of Health Services Research, Department of Public Health Sciences, Pennsylvania State University College of Medicine, Hershey, PA
2012-present	Medical Director of Research, Center for Nutrition and Activity Promotion, Penn State College of Medicine, Hershey, PA

Honors

1997-2001	Wisconsin Academic Excellence Scholar, University of Wisconsin, Madison, WI
1997-2004	University of Wisconsin Medical Scholar, Madison, WI
2002	Otto Mortensen Scholar, University of Wisconsin, Madison, WI
2003	Alpha Omega Alpha, The Honor Medical Society, University of Wisconsin, Madison, WI
2004	Dr. William S. Middleton Award, University of Wisconsin, Madison, WI
2006	Duke University Medical Center House Staff Research Award – First Place, Durham, NC
2007-2009	NRSA Primary Care Research Fellow, University of North Carolina, Chapel Hill, NC
2009	Penn State Hershey Medical Center Junior Faculty Development Program, Hershey, PA
2011	Society of General Internal Medicine, Hamolsky Award Finalist, Phoenix, AZ

Professional Memberships, Certifications, and Committees

2004 to 2009	North Carolina Medical Society
2006 to present	American College of Physicians
2007 to 2009	University of North Carolina Interdisciplinary Obesity Center (IDOC) Faculty Fellow
2007 to present	Obesity Interest Group Member, Society of General Internal Medicine
2007 to present	Society of General Internal Medicine (SGIM)
2007 to 2017	Diplomate/Board Certified, American Board of Internal Medicine
2007 to present	Ad Hoc Reviewer: *JAMA*, *Journal of Obesity, Journal of General Internal Medicine, Journal of Health Communications, Education for Health, Preventing Chronic Disease, Obesity Facts, Field Methods*
2009 to present	Reviewer, Workshop Submissions, Society of General Internal Medicine Annual Meeting
2009 to present	Penn State Hershey Institute for Diabetes and Obesity Associated Faculty Researcher
2010 to present	Penn State Comprehensive Cancer Center, Cancer Control Committee
2010 to present	Center for Nutrition and Activity Promotion Advisory Council Member
2011 to present	Penn State Center for Integrated Healthcare Delivery Systems (CIHDS) Faculty Member, Scholar Mentor
2011 to present	Penn State Department of Medicine Research Advisory Council Member
2011-2012	Society of General Internal Medicine Regional Abstract Committee Chair
2012	Society of General Internal Medicine National Research Committee Member

D. Research Support.

Ongoing Research Support

1KL2RR033180-01 (Sinoway) 03/01/2012 – 02/28/2015
NIH/Penn State Clinical and Translational Science Institute
Impact of a Volunteer Peer-led Intervention for Weight Control in Primary Care
The specific aims of this research plans are to translate a peer-led weight control program to primary care and determine the intervention efficacy for weight loss in a randomized controlled trial.
Role: KL2 Scholar

No Number Assigned (Kraschnewski) 07/15/2009 – 02/28/2015
Penn State College of Medicine (Department of Medicine)
Achieve Together PEERS: A Pilot Study of a Peer-led Group Weight Loss Intervention
The goal of this study is to determine feasibility of a volunteer peer-led weight control program.
Role: PI

1R01DK095078 (Sciamanna) 05/01/2012-04/30/2016
National Institute of Diabetes, Digestive and Kidney Disorders
Impact of Integrating an Internet Weight Control Program into Primary Care
To investigate the efficacy of a web-based weight control program that allows primary care providers to monitor their patients' adherence and outcomes and email them pre-written, tailored follow-up messages of support and accountability.
Role: Co-Investigator

Penn State CTSI (Chuang) 11/01/2012-12/31/2013
Community Engagement and Research Core
Development of a Smartphone Intervention to Prevent Excessive Gestational Weight Gain
The purpose of this study is to develop a self-regulation intervention that allows pregnant women to set personal goals for healthy Gestational Weight Gain, self-monitor their weight, and receive feedback about their GWG as they progress through pregnancy.
Role: Co-Investigator

1004646 (Kephart) 01/01/2011 – 12/31/2013
Highmark Foundation
Nrg Powered by Choice
This funding was provided to the Center for Nutrition and Activity Promotion to serve as the Coordinating Center for multiple school- and community-based organization grants. Center staff provides expertise in public health programming, valuation, and promotion, and interacts with groups to ensure project success and long-term sustainability.
Role: Co-Investigator