

A Program to Establish Healthy Lifestyle Behaviors with Freshmen Students

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The freshmen transition is a crucial time when students make health choices in their physical activities, eating behaviors, and stress management skills. A consortium of student affairs staff created and implemented an introduction to the wellness program through freshmen orientation classes. The program included a health behaviors assessment, educational resources, and interventions for individual lifestyle change process. This article presents baseline health behaviors of the first-semester freshmen and the statistical results of the changes that occurred with students receiving the interventions. Implications are discussed that provide a template for how to implement and sustain this type of program.

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The first semester of the freshman year is a critical time for students to make personal choices and initiate behaviors that can impact their health and well-being. Developmentally, starting the college experience opens the door for increasing autonomy, establishing new relationships, and creating a more independent identity. Regarding students' health behaviors, the first year of the college experience holds potential pitfalls including increased levels of stress (American College Health Association [ACHA], 2003), problem sleep behaviors (Trockel, Barnes, & Egget, 2000), excessive alcohol consumption (Wecshler, Lee, Kuo, & Lee, 2000), weight gain (Anderson, Shapiro, & Lundgren, 2003; Levitsky & Halbmaier, 2003), and exercise variation (Bray & Born, 2004).

A current significant health concern in this country is the increasing rate of overweight and obesity across all age groups but especially in the college-age population. The greatest increase from 1991–97 was found among 18- to 29-year-olds and among those with some college education (Mokad, Serdula, Dietz, Bowman, Marks, & Koplan, 1999). Two of the main factors leading to the rise in obesity and overweight in the United States are the consumption of too many calories and the lack of physical activity (U.S. Department of Health and Human Services, 2001). Furthermore, some scientists propose that unmanaged chronic stress-response may contribute to weight gain by influencing the eating of high-calorie foods (Dallman et al., 2003). Therefore, healthy management of eating, exercise, and stress during the college years is crucial to combat these growing rates of overweight and obesity in this age group and to help college students develop and maintain these healthy behaviors throughout their lifetimes.

This article describes a program implemented at a large Midwestern university, designed for students enrolled in freshmen orientation classes. The program was called “Healthy PAC-CATS,” an acronym standing for Personal Assessment Challenge to Choose Activities for Today’s Success. Three student services—including recreation, health education, and counseling—coordinated efforts with instructors of First-Year Experience classes to introduce freshmen students to early awareness of their lifestyle behaviors and learn how these behaviors could impact personal well-being and subsequent performance.

The Healthy PAC-CATS Program

Two important questions served as the backdrop for creating the Healthy PAC-CATS program to support the establishment of healthy behaviors with students. Can programs be developed in college and university settings to intentionally impact the health behaviors of its student population? And, when is the opportune moment for intervention to have its greatest impact upon students?

Research on worksite health promotion programs has indicated that health risk appraisals when followed by behavior change programs addressing the behaviors assessed have a positive impact on raising awareness and preparing individuals to change health behaviors (O'Donnell, 2002). Such methods have the potential to produce similar outcomes for students in university settings. An extensive study of 4,609 college students examined the association of physical activity, food choice, and weight management and concluded that colleges should implement programs to raise awareness and offer opportunities to enhance student health behaviors (Lowery, Galuska, Fulton, Wechsler, Kann, & Collins, 2000). Similarly, the American College Health Association has conducted health assessments for college students and promoted health behavior goals through initiatives such as the Healthy Student 2010 agenda (American College Health Association, 2002). The Health Center and Wellness Institute at the University of Wisconsin – Stevens Point, under the direction of Bill Hettler, has pioneered the development of student assessments and curriculum for promoting health behaviors (National Wellness Institute, 2006).

Research on college students has shown that physical activities change during the transition from high school to college and that there are significant associations between these behavioral shifts and increased fatigue and decreased vigor (Bray & Born, 2004). Other researchers have noted that behaviors across a number of health variables including exercise, eating, sleep, and stress management can impact academic performance, measured by grade point average (Trockel, Barnes, & Egget 2000). Hence, a need exists to demonstrate methods and programs that can assist first-year students in establishing healthy behaviors. The Healthy PAC-CATS program was designed to implement an intervention targeting health behavior assessment and change with

new college freshmen. In addition, the program of intervention contained evaluation and tracking methods to measure potential change.

The first objective of the Healthy PAC-CATS program was to assess the health behaviors of a large sample of the incoming freshmen class during the first 21 days of the fall semester. The assessment provided an overall picture of the health behavior status of new students and identified the areas in which the group needed to improve. For the individual student, it provided a personal profile of self-reported activity in the areas of physical activity, eating behavior, and stress management, comparing the students' activities to established healthy guidelines.

The second objective was to provide an educational intervention, during a regular class session for all attending students of these classes, that would help students interpret their personal health profiles and point them to resources for further exploration. The educational intervention included a 50-minute presentation on the three health areas assessed and access to a customized Web site for the PAC-CATS program. The Web site contained factual information on physical activity, eating behavior, and stress management and links to resources on campus and in the community.

The third objective was to provide an opportunity for volunteer students, having experienced the first two objectives, to participate in an 8-week intensive behavior change program. The change program outlined specific steps for each student to identify target goals and to plan and carry out activities to achieve their goals during the 8-week period. Several student mentors helped facilitate, support, and monitor the students' progress through their change programs. These trained paraprofessionals met individually at least four times with participating students during the 8 weeks.

Data were collected for the intervention objectives described above by using pretests and posttests of a health behavior assessment, a program evaluation, and goal accomplishment data. These measurements were important to provide a baseline of the health behaviors of the college freshmen, to analyze the impact of the program intervention, and to facilitate the improvement and sustainability of the program with future classes of freshmen students.

Methods

Instrumentation

The assessment and evaluation components of the PAC-CATS program provided three areas of measurement: The first component measured students' present behaviors in the areas of physical activity, eating behavior, and stress management and compared them to accepted health standards so that students could then establish goals to maintain or improve present behavior in these areas. The second measured individual readiness for change through successively increasing levels of action. The transtheoretical model introduced by Prochaska and DiClemente (1982) provided a construct for demonstrating individual progression, and sometimes regression, along the continuum of behavioral change from lower stages, such as precontemplation or contemplation, to higher stages, such as planning, action, or maintenance. Initially developed as a clinical tool, it has been adapted for health behaviors (Prochaska & Velicer, 1997). The third evaluative component assessed the actual behavioral changes that occurred over the length of the program as determined by retesting, analysis of goal attainment, and by anecdotal examples given through focus groups and individual illustration. The instrument developed as the primary assessment tool for this program was the Health Behaviors Assessment (HBA).

The Internet-based HBA was developed to assess self-reported demographic information, weight loss practices, weight status, physical activity, eating behavior, and stress management strategies. The HBA also assessed students' readiness to change for exercise, fruit and vegetable consumption, and stress management behaviors. Immediately after inputting responses to the HBA, students received their personal profile. This profile provided the student's Body Mass Index (BMI) and categorized the student's physical activity, eating, and stress management behaviors. BMI is a mathematical calculation utilizing a height and weight formula that has common acceptance for research and general medical assessments. The calculated BMI is then interpreted by showing a range of scores that correspond to these categories: underweight, normal, overweight, and obese. Feedback on eating behavior, physical activity, and stress management practice was provided to students by general categories with headings: "meeting rec-

ommendation,” “close, but not yet meeting recommendation,” and “not meeting recommendation.” Categories were defined using USDA nutritional guidelines for eating behaviors, American College of Sports Medicine and Centers for Disease Control recommendations for physical activity, and Kansas State University Counseling Services guidelines for stress management. An example of the HBA feedback profile resulting from the HBA assessment is provided in the Appendix to this article.

Procedure

Baseline Data Collection

Three colleges (education, arts and sciences, and agriculture) agreed to include the HBA as an assignment in their freshmen orientation classes. The administration of the HBA took place during a 2-week period beginning the first week of September. A total of 695 students, 86% of students enrolled in the orientation classes of the three colleges, were tested during the initial stage of their freshmen experience. The importance of this testing was to obtain a baseline on health behaviors regarding physical activity, eating behavior, and stress management (including time management, sleep, and relaxation activity) of the freshmen students.

Intervention Programs

After completion of the HBA, selected classes, which contained 450 of the tested students, received a classroom presentation on the Healthy PAC-CATS program. The 50-minute presentation informed students about the need for healthy lifestyles and explained the Healthy PAC-CATS program. It was also a time to recruit students into one of two interventions designed to improve their health behaviors. Option 1 was the intensive change intervention, an 8-week program that used peer mentoring and the PAC-CATS online educational resources. This program included a process following a structured program for individual change, which involved establishing goals, outlining activities for goal attainment, and monitoring weekly progress. The individualized change program was monitored and facilitated by a trained peer mentor assigned to each participant student. Incentives for this program included credit for a course activity assignment and a PAC-CATS

recognition prize (T-shirt, water bottle, or sport bag). Participants also had access to a daily journal for monitoring goals and pedometers for measuring exercise. Option 1 had 85 volunteers who signed a contract card acknowledging their agreement and permission as a human subject for research. The intensive program was completed by the end of the third week of November when they had a wrap-up meeting and retest of the HBA and responded to an online program evaluation survey.

Option 2 was an educational intervention that used individualized self-monitoring, where students reviewed the HBA and made their own personal decisions for change. They also had access to the PAC-CATS online educational resources. Incentives included the PAC-CATS recognition prize (T-shirts, water bottle, or sport bag) upon completion of the HBA retest during the third week of November. Option 2 had 148 volunteers. A total of 233 students from the class, 52% of 450 students, volunteered for either Option 1 or Option 2 interventions. Comparisons between the impact of the two different interventions, Option 1 and Option 2, were made on behavioral changes measured by the HBA.

Results

Baseline Health Behaviors

Six hundred ninety-five students were tested on the HBA during the initial stage of their freshmen experience. Participants consisted of 306 male students (44%) and 387 female students (56%). The majority of the students were 18–19 years old (94%) and White–non-Hispanic (85%). Sixty-eight percent were living at on-campus residence halls, 11% lived at fraternity/sorority houses, and 22% were fraternity/sorority members. Seventy-five percent indicated that they were not working.

Results from the new freshmen indicated that 32% of the students had a BMI in the categories of overweight or obese (25.1% female and 39.1% male students). On the scales of readiness for change in behavior, 21.5% indicated they were planning action and 47.5% were taking or maintaining action to meet acceptable levels of physical activity. However, only 10% were at the action or maintenance stage for

acceptable fruit and vegetable consumption levels and 32% indicated they were planning to meet standards. For stress management, 19.7% were planning and 41% were taking action to relax and manage stress.

Baseline health behaviors of the freshmen at the beginning of their first semester are summarized in Table 1. In the area of physical activity, 77.8% of students were meeting recommendations for maintaining general physical activities, while a more moderate number of students were maintaining recommended levels of stretching/flexibility (45.9%) or strength training (42.7%). Students were meeting eating behavior standards at a much lower level with only 18.6% consuming recommended levels of whole grains, 17.1% meeting the standards for low-fat dairy products, and 27.6% eating high-fat foods sparingly within the recommended guidelines. For fruits and vegetables consumption, 40.5% were maintaining standards. In the area of stress management, 78.2% claimed to manage their time adequately, 63.4% used positive thinking, and 77.2% implemented creative problem solving. Stress impacts were sometimes too frequently a problem for 77.7% of the students, 36.1% were frequently using relaxation techniques, and 58.4% indicated they regularly received 6 or more hours of sleep.

Analyses on gender differences indicated that female students had better eating behaviors, specifically regarding foods recommend to consume moderately or sparingly—such as caffeinated beverages (73.4% females versus 61.1% males meeting recommendations), regular pop/soda (78% females versus 58.8% males), sweetened beverages (75.5% females versus 61.1% males), and alcoholic beverages (73.6% females versus 56.9% males). Male students were more physically active, especially with regard to strength training (52.9% males versus 34.9% females meeting recommendations). Male students also used relaxation techniques more frequently (41.8% of males versus 31.6% females) and had less stress impact (33.6% males versus 13.5% females indicating rarely a problem).

Comparisons Between Option 1 and Option 2 Interventions

The question was asked whether there would be differences in health behavioral changes from the beginning of the first semester to the end of the semester between students receiving the intensive change inter-

Table 1
Health Behaviors of College Freshmen at the
Beginning of their First Semester
(N = 695)

	Meeting recommendation (%)	Close, but not meeting recommendation (%)	Not meeting recommendation (%)
Physical Activity			
General Physical Activity	77.8	20.4	1.7
Stretching/Flexibility	45.9	18.1	36.9
Strength Training	42.7	15.8	41.4
Eating Behavior			
(1) Foods that should be consumed often			
Fruits & Vegetables	40.5	19.0	40.4
Whole Grains	18.6	28.3	53.1
Low-Fat or Fat-Free Dairy	17.1	31.4	51.5
(2) Foods to use in moderation or sparingly			
High-Fat Foods	27.6	45.5	26.9
Caffeinated Beverages	67.9	19.6	12.5
Regular Pop/Soda	69.5	20.9	9.6
Sweetened Beverages	69.1	19.0	11.9
Alcoholic Beverages	66.2	10.6	23.2
Stress Management			
Time Management	78.2	20.8	1.0
Relaxation Techniques	36.1	51.9	12.0
Positive Thinking	63.4	33.1	3.5
Creative Problem Solving	77.2	22.3	0.6
Stress Impact	22.3	48.1	29.6
Sleep	58.4	33.4	8.2

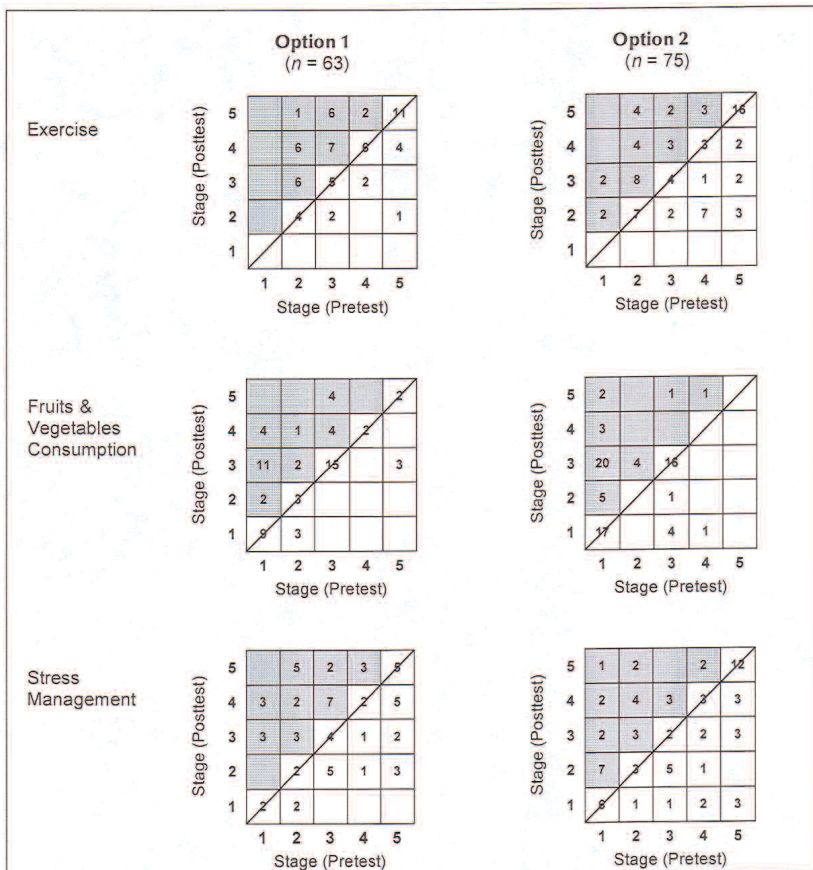
vention (Option 1) and those in the educational intervention (Option 2). One hundred thirty-eight freshmen completed one of the two intervention programs: Sixty-three for Option 1 (50 females and 13 males) and seventy-five for Option 2 (45 females and 30 males). Changes from pretests to posttests were analyzed on readiness for change and on reported health behavior changes in the areas of physical activity, eating behavior, and stress management.

Readiness for Change

The assessment and educational components of the program were hypothesized to raise student awareness of needs to improve and

would be reflected on movement of student readiness to higher levels. Figure 1 depicts individual movement in readiness stages between pretest and posttest. Progress is demonstrated by showing individual movement on the scale from a lower stage to a higher stage.

Figure 1
Individual Movement in Readiness for Changes
from Pretest to Posttest



Cell values indicate number of students: cells on the diagonal line reflect no changes from pretest to posttest, cells above the diagonal line (shaded) reflect increased readiness, and cells below the diagonal line reflect regression of readiness.

Readiness Stages: 1=Precontemplation, 2=Contemplation, 3=Planning, 4=Action, and 5=Maintenance.

Readiness for exercise increased by 44.4% of Option 1 and 37.3% of Option 2 students from pretest to posttest. Fewer Option 1 students (14.3%) showed regression of readiness for exercise as compared to Option 2 students (22.7%). For fruits and vegetables consumption, however, more students in Option 2 indicated increased readiness (30.1% of Option 1 and 44.4% of Option 2).

Readiness for stress management increased by 44% of Option 1 students and 34% of Option 2 students. Regression, or moving to a lower stage, in readiness for stress management had a similar pattern between the two groups. However, five students in Option 2 reported considerable regression to stage 1 (precontemplative) from stage 4 (Action) or 5 (Maintenance), whereas none of Option 1 students reported such regression.

Health Behavior Changes

Option 1 students made statistically significant behavior gains on 13 of 17 categories of health behavior. This included all three areas of physical activity, seven of eight categories of eating behavior, and three of six categories of stress management behavior. Option 2 students also demonstrated gains on four of the 17 areas. Table 2 provides complete results on comparisons of behavior changes from pretest to posttest for each of the two groups and comparisons between the two groups in change scores (post minus pre).

Compared with pretest, Option 1 students significantly improved their physical activity levels in all three areas (general physical activity, stretching/flexibility, and strength training) at the end of the program. Option 2 students also reported significant improvements in the areas of stretching/flexibility and strength training, but there was no significant change in general physical activity. Levels of the improvement, demonstrated by their change scores, for Option 1 students were greater in all three areas of physical activities than those for Option 2 students, and the difference between the two groups was statistically significant.

In the area of eating behavior, Option 1 students reported significantly increased consumptions of all the three areas of "foods that should

Table 2
Health Behavior Changes of College Freshmen
in PAC-CATS Intervention Programs
(Intensive Change Intervention, *n* = 63;
Educational Intervention, *n* = 75)

	Option 1 (Intensive Change Intervention)			Option 2 (Educational Intervention)			Group Difference <i>p</i> ^b
	Pretest Mean (SD)	Posttest Mean (SD)	<i>p</i> ^a	Pretest Mean (SD)	Posttest Mean (SD)	<i>p</i> ^a	
Physical Activity							
General Physical Activity	2.73 (.45)	2.89 (.32)	.013	2.72 (.53)	2.75 (.50)	.364	.133
Stretching/Flexibility	2.10 (.93)	2.75 (.59)	.000	1.91 (.93)	2.36 (.80)	.000	.092
Strength Training	1.90 (.89)	2.40 (.83)	.001	1.96 (.91)	2.17 (.91)	.035	.044
Eating Behavior							
(1) Foods that should be consumed often							
Fruits & Vegetables	1.95 (.85)	2.49 (.79)	.000	1.72 (.86)	2.27 (.86)	.000	.403
Whole Grains	1.65 (.79)	1.84 (.75)	.033	1.64 (.75)	1.71 (.77)	.268	.255
Low-Fat or Fat-Free Dairy	1.62 (.75)	1.81 (.78)	.039	1.68 (.68)	1.68 (.70)	.492	.123
(2) Foods to use in moderation or sparingly							
High-Fat Foods	2.24 (.73)	2.35 (.70)	.140	2.09 (.74)	2.16 (.74)	.233	.435
Caffeinated Beverages	2.54 (.67)	2.76 (.56)	.002	2.59 (.68)	2.71 (.56)	.070	.172
Regular Pop/Soda	2.62 (.55)	2.83 (.42)	.003	2.59 (.66)	2.75 (.52)	.021	.240
Sweetened Beverages	2.65 (.68)	2.79 (.51)	.042	2.61 (.63)	2.71 (.61)	.089	.446
Alcoholic Beverages	2.43 (.78)	2.62 (.68)	.019	2.60 (.77)	2.51 (.78)	.129	.010
Stress Management							
Time Management	2.76 (.43)	2.81 (.40)	.257	2.76 (.43)	2.77 (.45)	.391	.332
Relaxation Techniques	2.13 (.71)	2.35 (.68)	.007	2.16 (.64)	2.26 (.66)	.131	.223
Positive Thinking	2.52 (.54)	2.77 (.42)	.001	2.64 (.48)	2.66 (.50)	.328	.009
Creative Problem Solving	2.66 (.48)	2.82 (.39)	.021	2.72 (.48)	2.72 (.45)	.500	.036
Stress Impact	1.73 (.66)	1.87 (.53)	.078	2.00 (.70)	1.92 (.70)	.195	.035
Sleep	2.40 (.64)	2.47 (.65)	.225	2.59 (.59)	2.64 (.61)	.246	.384

Note. Scores are based on a 3-point scale (1 = Not meeting recommendation; 2 = Close, but not yet meeting recommendation; 3 = Meeting Recommendation).

^a Wilcoxon Signed Rank Tests for differences between pretests and posttests within each of the two groups (one-tailed, alpha=.05).

^b Mann-Whitney Tests for differences in change scores (post minus pre) between the two groups (one-tailed, alpha=.05).

be consumed often,” while Option 2 students reported significant increases only for fruits and vegetables consumption. For “foods to use in moderation or sparingly,” Option 1 students significantly reduced consumption of caffeinated beverages, regular pop/soda, sweetened beverages, and alcoholic beverages (all areas except high-fat foods);

while Option 2 students reported significantly reduced consumption only in regular pop/soda. In comparisons of change scores between Option 1 and Option 2, there was a directional difference in alcohol beverages consumption. Option 1 students reported a decrease of alcohol consumption, whereas alcohol consumption of Option 2 students slightly increased at posttest. The difference in changes for alcohol consumption was statistically significant between the two groups. In the areas of stress management, Option 1 students significantly improved in using relaxation techniques, positive thinking, and creative problem solving; while there were no significant changes for Option 2 students in any of the stress management areas. Compared with Option 2, levels of improvement for Option 1 students were significantly greater in positive thinking, creative problem solving, and stress impacts. In addition, a directional difference between the two groups was found in change scores for stress impact. Option 1 students reported a decrease of stress impact at posttest, whereas Option 2 students reported slightly increased stress impact.

Implications

The PAC-CATS project provided a wealth of information about freshmen student health behaviors. The program demonstrated how increased awareness of personal health behaviors coupled with opportunities to initiate improvement in behaviors through self-selected goals, a health educational Web site, and mentor assistance, can actually promote healthier behaviors. Based upon the experience, the following points describe several implications for continuing this or similar strategies.

1. Students in this institution reflected similar characteristics to national norms in that nearly one-third of all freshmen tested had a BMI classified as overweight or obese. The objective to confront this growing trend by looking closely at their activity was justified. Awareness and education alone provided positive results; however, an intensive intervention using goal setting, monitoring, and mentor assistance produced greater improvements in health behaviors.
2. Readiness, as a measurable construct, has implications for providing differential strategies to support students based upon their

level of awareness and motivation. For example those volunteering for intensive change program (Option 1) included less pre-contemplators compared to Option 2. This is a finding that would be predicted. After initial assessment and a 50-minute presentation, on the other hand, students in Option 2 who started as pre-contemplators showed increases in readiness levels. Similarly, those already actively engaged in a regular program of healthy eating, exercise, and even relaxation or time management strategies do not need a program of goals for change, but a system of maintenance and interpersonal support, as students at that level reported being very interested in having a visible program and connection with a mentor to help maintain their activity.

3. Students, as a whole, tended to be more conscious and more involved with physical activity than healthful eating behaviors. In college, students commonly eat irregular meals, late night snacks, or excessive junk foods containing high fat and do not consume a healthy level of fruits and vegetables. Most students who set personal improvement goals made decisions that included both exercise and nutritional change, understanding the complimentary nature of these two health behaviors for weight reduction or maintenance. Stress management and sleep behaviors had a less predictive pattern.
4. Students found that taking charge of scheduling their time and making personal health behaviors a planned and routine part of their day was essential to their maintaining consistent exercise programs, balanced food intake, regular sleeping hours, and time to relax.
5. Students involved in the intervention options were learning a process to self-regulate. The term “self-regulate” was used in this program to describe what happens when the individual student makes a personal assessment, determines goals for changing behavior, and proceeds to systematically take steps and monitor progress to implement the change. When this happened, students gained a sense of self-efficacy that they were able to transfer into many other areas of their life. For example, one student set three different goals towards exercise, improved sleep, and eating routine. He achieved these goals and decided that he could go further.

Indicating that he had always wanted to play a musical instrument for personal enjoyment, the student bought a harmonica and instructional DVD to learn how to play. He used the harmonica for relaxation and as personal reward for his success.

6. The intervention program demonstrated how peer mentors could be effectively used as facilitators and support for participants. They were seen as a resource for information, as a monitor or check-in to keep on track, and an overall support. Participant students commented that having a peer assist them provided support without the intimidation of an authority figure or expert. To the participants, the mentors were “more like them” and were able to understand how enjoyable a “good bowl of ice cream” or a “slice of pizza” might seem without making participants feel like they had failed their programs.
7. Interaction with the participants in focus groups revealed that many found themselves becoming role models to roommates, friends, and even family members. Example stories described roommates asking participants about their time management systems, friends becoming workout partners, family holiday meals including more healthy foods, and some students even petitioned eating centers in their Greek houses to provide more fresh fruit and vegetable options. There were several anecdotal examples of students who gained a sense of pride and responsibility through their experience. Participants reported a ripple effect of being a model of success and feeling good about exemplifying healthy practices that spread to others.
8. From an institutional perspective, considerable advantage resulted by the pooling of resources from the three different student service offices and using academic classrooms as an initial contact point. First, there was a greater variety of staff expertise and resources from these offices to provide information, training, physical space, and publicity about the program. Second, the use of coordinated and cooperative programs introduced participating students to these different services as places they could receive personal resources that could be useful to them in areas of self-improvement. Finally, while the program had the resources of a grant to initiate the development of the program, the sustainabil-

ity of the program in future years was greatly enhanced by the opportunity to integrate the successful strategies into ongoing programs of each service. Similarly, it was found that the students selected and trained as peer mentors; and they gained practical personal benefits as they were able to attain experience relevant to degree programs in majors such as nutrition, kinesiology, social work, and psychology.

Limitations and Further Recommendations

The target of the Healthy PAC-CATS program was to reach first-semester college freshmen with three levels of outcome objectives. The first level was to have students assess their present health behaviors and receive feedback. In order to achieve this the program had access to freshmen orientation classes in three academic colleges of the institution. This access provided an opportunity to reach a significant number of first-semester freshmen; however, even this much access could only reach one-third of the first-year class. The second level was to have students identify goals for health behavior improvement and provide them with examples of activities and resources for making those improvements that they then would carry out on their own initiative. The third level of outcome included the assessment and goal setting, plus a continuing contact and monitoring program that included a peer mentor as a support and facilitator toward goal accomplishment.

The last two levels of the program were dependent upon student volunteerism and self-maintenance to comply with the intervention. While there were high levels of participation and good compliance with the program, overall, the fact remains that the lack of randomization and the inability to control other mediating experiences created problems for clear interpretation of results. Twenty percent of the original volunteer participants for Option 1 intervention did not complete the program. There seemed to be multiple reasons for this including a few that left the university before the semester was over, a small number of students that who said they did not have time to continue, a mentor who was less efficient in providing follow-up, and possibly some other unknown reasons. However, this points out the difficulty involved in accurately interpreting outcome results. This program intervention, which had positive results, must be understood

as more of a template or model for such programs and must be cautiously adapted to specific settings and different population types.

The Healthy PAC-CATS program included a year of materials and program development as well as the year of first-time implementation that has been outlined in this article. Overall, the HBA instrument, the online resources, information materials, and training of peer mentors proved to be useful tools of a package that has portability for subsequent applications with the targeted student population. However, it should also be noted that areas in which improvements could be made were found. For example, there were a few items on the HBA that could be made more specific such as the hours of sleep per night. The PAC-CATS program needs to be modified from the feedback for what works and what does not work.

A suggestion for future applications was to apply the program to different subject groups such as upperclassmen or in special environments such as a residence hall setting. What would be the impact of this type of program on a small campus where the involvement and commitment of the total environment could make a difference? Another suggestion was to implement the program in a more intensive manner such as in a summer intersession class. The program model has basic ingredients that would seem adaptable to a variety of settings and time segments. The optimal use of a PAC-CATS, or similar health behaviors interventions, could benefit from trying out the model in different settings, with specific student subgroups or at different time points in the college experience.

Some results of this program warrant further study. For example, one question on the HBA asked about the amount and consistency of sleep behavior. Several students made improving and regulating sleep patterns a personal goal. There was some individual information that indicated that sleep improvement could have important implications for academic success. Another example of further study includes the possibility of identifying student levels of positive self-outlook and student personal satisfaction with the campus or life in general. What are the relationships between a positive outlook or self-confidence on the implementation and successful completion of improved health behaviors? Furthermore, could the influence of social support play a

role in the successful follow-through with goal-oriented activity? Would having workout buddies or group activities make a difference? Finally, what are the long-term effects of intervention? Do students need “booster shots” or reminders of some type to maintain and continue healthy behavior gains? Inclusion of mediating variables and the use of longitudinal study would help to answer these questions.

Overall, the results of the Healthy PAC-CATS program exceeded expectations. The initial question sought to determine if an intentional intervention could demonstrate positive change in students’ health behaviors. Considerable evidence supported this conclusion. A second question hypothesized that an intervention early in the college experience would be an ideal moment for the establishment of a pattern of healthy behavior. Freshmen students were attentive and concerned about the potential for becoming victims to the fabled “freshmen 15.” The results on BMI indicated no significant change in weight from pretest to posttest; however, this span was only approximately 9 weeks. Further study would need to be conducted to look at student health behaviors over a longer time span during the college experience.

Appendix A

Your PAC-CATS Health Behaviors Assessment Profile

I. Weight Status According to BMI*

Your BMI is: 25	Classification of Weight Status by BMI	
	BMI (lbs./in ² x703)	Weight Status
	<18.5	Underweight
	18.5–24.9	Normal
	25.0–29.9	Overweight
>30	Obese	
<p>*Body Mass Index (BMI) is a ratio of your weight to your height squared. It is just one of the many factors used to predict risk for developing chronic disease, such as heart disease, cancer, or diabetes. BMI is not a measure of body fatness. For more information, please visit http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-means.htm</p>		

✓✓✓ = Doing Well
 ✓✓ = Could Improve
 ✓ = Need improvement

II. Nutrition

Category—Foods that should be consumed often (Recommended Consumption)	Meeting recommendation	Close, but not yet meeting recommendation	Not meeting recommendation
Fruits and Vegetables (5 to 9 servings daily)			✓
Whole Grains (3 servings daily)			✓
Low-Fat or Fat-Free Dairy (3 servings daily)			✓

Category—Foods to use in moderation or sparingly	Low Consumption	Moderate Consumption	High Consumption
High-Fat Foods	✓✓✓		
Caffeinated Beverages	✓✓✓		
Regular Pop/Soda		✓✓	
Sweetened Beverages			✓
Alcoholic Beverages	✓✓✓		

III. Physical Activity

Category—Recommended/Suggested Guidelines	Meeting recommendation	Close, but not yet meeting recommendation	Not meeting recommendation
General Physical Activity (Vigorous intensity: 20 Minutes 3 times/week) —OR— (Moderate intensity: 30 minutes 5 times/week)	✓✓✓		
Stretching/Flexibility (At least 2 times/week)		✓✓	
Strength Training (At least 2 times/week)		✓✓	

IV. Stress Management

Category—Skills	Frequently use skill	Sometimes use skill	Rarely use skill
Time Management		✓✓	
Relaxation Techniques	✓✓✓		
Positive Thinking		✓✓	
Creative Problem Solving	✓✓✓		

Category—Stress Impact	Rarely a problem	Sometimes a problem	Frequently a problem
My eating and physical activity behaviors become less healthy when I am feeling stressed			✓

Category—Sleep	Frequently	Sometimes	Rarely
I get 6 to 8 hours of sleep per night		✓✓	

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