

Improving the Effectiveness of an Online Fitness Program: The Walk Georgia Experience

Abstract

Many Extension programs are addressing the obesity issue through on-line physical activity programs. Using data from the Walk Georgia program at the University of Georgia Cooperative Extension, two regression analyses were conducted to determine the characteristics of those who under-utilize the program and what factors influence how effectively a county recruits participants. The results of the data analysis show that Extension must develop incentives to motivate those who participate less, such as women, minorities, and those with lower incomes and less education and enlist volunteers and other community leaders to recruit more participants.

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Introduction

An article by Teran and Hongu (2012) compared Extension programs in 14 states in terms of how their websites encourage physical activity (PA). Shared characteristics of these websites were:

- A mechanism to track miles to show progress
- Easily accessible program dates, fees, and mission statements
- Contact information for questions from participants
- Education resources to promote positive lifestyle change
- A link to the Extension website

The need for Extension programming in PA is undeniable. In the report *F as in Fat: How Obesity Threatens America's Future 2012*, 26.9% of Georgia's adults have no leisure time activity. Additionally, 28% are obese—up from less than 10% in 1986 (Trust for America's Health & The Robert Wood Johnson Foundation, 2012).

A review of 15 research articles on Internet interventions for increasing PA found that these

programs used email, chat rooms, lesson plans, or newsletters to maintain communication with participants. Face-to-face contact was not needed for positive results. A few used Internet exercise logs. More frequent log-ins to the website and more contacts (>5) with the intervention resulted in more PA. Eight interventions showed positive increases in PA, but levels diminished after 3 months (Vandelanotte, Spathonis, Eakin, & Owen, 2007).

Another review of Internet-based PA interventions found that program duration mattered, with longer contact being more effective than shorter contact. The authors concluded that these Internet websites were as effective as face-to-face programs and could have a greater reach while being more cost effective, but felt more Internet-based interventions were needed to show true efficacy (Mehta & Sharma, 2011).

Extension's effectiveness at on-line PA promotion would improve if more states follow the advice of Teran and Hongu (2012) and develop programs and websites of this type. This article explores another facet of program improvement—namely, how evaluation data can be used to make an already established Web-based PA program more effective.

The Walk Georgia Program

The University of Georgia Cooperative Extension began its on-line PA program, Walk Georgia, in 2007. From 2008-2010, Walk Georgia was an 8-week program, conducted twice a year. In 2011, based on client feedback, it was extended to a 12-week program offered only in the spring. Clients can participate as an individual or as a member of a four-person team. They enter their daily record of PA onto the website. Fifty-seven different types of exercise can be entered, and the software converts the minutes of each activity into a mileage equivalent.

For every five miles "walked," the participant moves across an on-screen map of Georgia to "visit" a county. A goal is to "walk" each of the 159 counties, or to log 795 miles. To provide additional motivation, top performers in each county are displayed on-screen, and everyone receives a certificate of participation. Participants are also emailed a colorful weekly newsletter with a low calorie recipe and weight management and PA tips. County offices also personalize the competition by offering local incentives and recognitions.

During a typical session about 2,500 clients participate. As of 2012, there were about 6,100 subscribers to the program's email list. To improve the program, data stored on the website's server have been analyzed with two program management questions in mind: 1) What are the characteristics of clients who under-utilize the program and 2) Why are some county offices more successful at enrolling clients?

Statistical Results

To address the first question, we applied linear regression analysis to the data that tracked program participation. The dependent variable was the number of days that a client exercised. The mean number of days of participation was 22.64, with a possible range of 1 to 56 days.

Clients provide their demographic characteristics during the registration process. The regression model reported in Table 1 was estimated with data from the 1,016 participants enrolled in the Fall of

2009 who indicated that their personal information could be used for research. Ten independent variables were used in the regression. Obviously there are many other predictors of an individual's exercise participation, such as personal motivation. However, such characteristics cannot be directly observed, so they cannot help Extension staff target clients who under-utilize the program.

Table 1.
Regression Analysis of the Number of Days in Which the Participants Exercised
(n=1,016)

Parameter	Summary Statistics		Ordinary Least Squares Estimates	
	Mean	Standard Deviation	Beta Coefficient	t-Ratio
Intercept	n.a.	n.a.	3.39	0.75
Years of Age	43.58	12.31	0.31	6.81*
Years of Education	15.42	2.62	-0.07	-0.35
Fulltime Work=1, =0 otherwise	0.77	0.42	0.76	0.63
Nonwhite=1, =0 otherwise	0.17	0.37	2.62	1.94*
Female=1, =0 otherwise	0.80	0.39	-3.81	-3.02*
Number of Dependents	0.67	1.03	-0.28	-0.55
Household Income, \$1,000	65.48	29.36	0.01	0.39
Single=1, =0 otherwise	0.28	0.45	-1.56	-1.2
Team=1, =0 otherwise	0.412	0.49	5.73	5.44*
Past Month=1, =0 otherwise	0.91	0.29	7.35	4.25*
Note: * indicates rejection of the one-tailed hypothesis test at the 5% level of significance, R ² is 10%, F statistic for the full model is 11.21, significant at the 1% level				

The first variable in Table 1, a person's age, had an average of 43.5 years. It was hypothesized that age would have a positive effect on the number of participation days, because older adults are more likely to need an exercise program. The regression coefficient for age was positive and significant. Because this regression has a linear functional form, the beta coefficient of 0.31 indicates that as age increased by 1 year, the participant exercised another third of a day, or 1 day for every 3 years of

age.

Years of education were also expected to be a positive influence, because people with more education may be more aware of the benefits of exercise. However, this variable was not significant in the model. Therefore, statistically speaking, education's effect was zero. However, it is noteworthy that the average participant was highly educated, with 15.4 years of schooling, and the variability was quite small, as indicated by the standard deviation of 2.6.

One would expect that being unemployed or retired would allow a person more opportunity to do PA. However research has shown varying effects of employment, unemployment, and retirement on PA. One study found men who work full time, even with sedentary jobs, engage in more PA than non-working healthy males. In contrast, women working full time were less active than unemployed women (Van Domelen et al., 2011). Another study found that with retirement vigorous activity decreases, but walking and other moderate activities increase (Evenson, Rosamond, Cai, Diez-Roux, & Brancati, 2002). Those who retire from physically demanding jobs become less active after retirement, and those retiring from sedentary jobs become more active. Higher income after retirement is also associated with more PA (Chung, Domino, Stearns, & Popkin, 2009). In the case of Walk Georgia, this variable was positive but again it was statistically insignificant.

A participant's race was considered, but the direction of influence was hard to predict. Only 17% of participants were nonwhite, even though about 30% of Georgia's population is African American. The beta coefficient for this dummy variable indicates that nonwhites participated almost 2.6 days more than white participants.

The participant's gender was another important variable. Eighty percent of participants were female. The effect of gender was negative and significant. Females exercised 3.8 days less than males.

With the gender and racial dummies defined as in Table 1, it is possible to identify the group that most needs attention. White males are not represented when either of the dummies equals one, so their base participation is indicated by the regression's intercept term, or 3.39 days. Nonwhite males had higher participation as reflected in the dummy coefficient of 2.62 days. Nonwhite females participated less than white males by an amount that is the sum of the two dummy coefficients, 1.19 days. Finally, compared with white males, white females participated 3.81 fewer days. Thus, although white females were the majority of participants, they exercised less than would be expected.

The number of dependents in a family was presumed to be a negative influence, because this could also indicate that a person had less spare time for PA. Dependents were negative, but insignificant in the model. Reported household income was expected to be a positive influence, because recreation and exercise are usually shown to increase as household income increases. The average income was about \$65,000, and its influence was positive, but insignificant. A person's marital status may also be important, but the direction of its influence was hard to predict. Results indicated that single participants were less active than married people, but this effect was not significant in the model.

Members of a team may be more committed to the program, due to friendship and group dynamics. This hypothesis was confirmed here, with the team variable being positive and significant in both

models. The final independent variable was a dummy for whether the participant had reported any exercise during the month before the program started. The coefficient for "Exercise in the Past Month" was positive and significant, and indicated that the 91% of participants who reported PA just prior to the start of Walk Georgia exercised 7.35 more days than those who did not.

To answer the second research question, the number of participants recruited by a county Extension office was determined by a set of four county-level characteristics, all of which were statistically significant. From Table 2, the first variable considered was the number of county office workers, including faculty and staff. It would be expected that if a county Extension office had more employees, it could devote more effort to participant recruitment. The number of county staff members was positive, and the beta coefficient of 4.11 indicates that an office with just one extra staff member would have four additional participants.

Table 2.

Regression Analysis of Number of Participants Recruited by a County Extension Office into the Program (n=158 county Extension offices)

Parameter	Summary Statistics		Ordinary Least Squares Estimates	
	Mean	Standard Deviation	Beta Coefficient	t-Ratio
Intercept	n.a.	n.a	-35.66	-3.09*
Number of Staff	3.65	1.84	4.11	2.64*
Percent of Households with Broadband Availability	78.44	22.15	0.20	1.73*
Ratio of Female to Total Staff	60.25	19.59	0.29	2.36*
Special Program=1, =0 otherwise.	0.037	0.19	50.87	3.52*
Note: * indicates rejection of the one-tailed hypothesis test at the 5% level of significance, R ² is 28%, F statistic for the full model is 15.09, significant at the 1% level				

More participants were also recruited in counties with a higher ratio of female Extension staff. This positive effect was expected because the program is primarily run by Family and Consumer Science faculty.

Also, if the staff coordinated with an established group such as a school or senior center, they recruited a much larger number of people. The beta coefficient of 50.87 for this dummy variable indicates that the county can expect to attract about 51 more participants if they partner with another established group.

Those counties with higher levels of broadband availability had higher participation rates (NTIA, 2012). Obviously, this is an important consideration for a program that is delivered primarily on-line. The data reveal that in the average county, broadband service was available to 78% of households. This varies from 100% in the metro counties to less than 50% in some rural counties. The beta coefficient of 0.2 implies that if availability increased by 5%, participation would increase by one person. While the effect is small, its statistical significance further illustrates the continuing difficulty that Extension faces in trying to reach clientele underserved by broadband Internet.

Summary and Conclusions

This article attempts to answer an important question that every Extension program involved in promoting PA must face: Once a state has initiated an on-line PA program, how can it be improved and maintained?

First, to encourage more use of an on-line PA program, Extension must make special efforts to reach individuals not fully participating. These individuals included women, especially those working full time; single adults; minority groups; individuals not on a team; and those with less education and income. For example, Extension staff might partner with businesses that are predominately female to form teams and promote mutual support. Special incentives could also be offered such as free childcare provided by 4-H members at certain parks so women can exercise together or a drawing for a makeover for women who log a specific number of miles during a certain week. To promote more participation by individuals, Extension could use social media to link people to form teams. Efforts might also be intensified to partner with job training centers, technical schools, churches, housing authorities, community centers, or other organizations that serve low-income people or other under-represented groups.

While adding Extension staff, especially Family and Consumer Science agents, would be ideal, this is not always feasible. This means that either other staff members must take more active roles in the program or volunteers from the community must become staff extenders.

A good local advisory committee can often help Extension to find "PA champions" with local schools, businesses, health care institutions, and other organizations that will allow the program to reach more people. 4-H members might also take on the promotion of such a program as a community project if they are interested in health issues. Again actively promoting the program and developing partnerships is key.

Finally, broadband Internet access is a crucial barrier in some communities. Currently Walk Georgia allows team captains to log for team members without Internet access. While this is cumbersome, such an option may need to be promoted more to those who either lack Internet access or who are uncomfortable with an on-line environment. Hopefully as more Internet access becomes available, this barrier will disappear.

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