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14. ABSTRACT The specific aims of this research project are: 1) development of the Military Soldier Fitness Database, a computer-based data collection system that can be used to record and track the results of the Army Physical Fitness tests and measurements of body weight/fatness across time, 2) development of an environmental/Internet-based intervention to promote healthy weight through proper nutrition and physical fitness 3) test of the efficacy of and consumer satisfaction with the environmental/Internet-based intervention in a single population, i.e., Soldiers at Fort Bragg, NC. These aims fit into a three phase project completion plan. The research team from Pennington Biomedical Research Center (PBRC) has completed phases 1 and 2 of this three phase project. In Phase 1, the PBRC team studied the unique needs of the military as they pertain to the primary aims. Guided by the Executive Committee, a prototype for the computerized database was established and the architectural design of the Internet-based intervention was developed. In Phase 2, PBRC personnel developed, refined, and pilot-tested the MSFD and the Internet program. Phase 3, which includes a controlled evaluation of the environmental/Internet-based intervention, is currently in progress. The environmental/Internet-based program was implemented in July 2006 and data are being collected via the Internet-based program. The primary endpoints of the Intervention will be to determine consumer satisfaction with the program and the amount of Internet activity on the website.					
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Introduction

The research project was initiated in June 2003 and was planned to end in May 2007. Due to a number of delays related to the War on Terror, the project has been extended until December 2009. An initial no-cost extension of the study was obtained in April 2007. A second no-cost extension of the study was recently approved in May 2008. As described in the request for the second no-cost extension, the active promotion of the website intervention will be discontinued on August 1, 2008. However, the website itself will remain available and active until July 31, 2009. An additional five months (August 1, 2009 thru December 31, 2009) are planned for statistical analyses and dissemination of the findings of the study. This additional data collection effort will test the importance of inclusion of a long-term health promotion program to sustain utilization of the website intervention.

A report on the progress of this study was submitted in May 2007. With approval of the no-cost extension, this report will serve as an annual report for the study. The final report will be submitted in December 2009 when the study officially concludes. The following sections provide details about accomplishments that are directly related to the Statement of Work. This report highlights the progress made since the last report in May 2007.

The primary aim of this investigation, entitled "Military Health Behaviors: Promotion of Healthy Weight and Fitness in Career Personnel" is to provide a non-clinical, environmental approach for weight gain prevention and modest weight loss for Soldiers at Fort Bragg, NC. This program is called "Healthy Eating, Activity, Lifestyle Training Headquarters (H.E.A.L.T.H.)". Soldiers who fail to meet Army requirements for body fat defined by AR 600-9, the Army weight Control Program (AWCP), and fitness standards defined by FM 21-20, Physical Fitness Training, Army Physical Fitness Test (APFT) are the primary targets of the intervention. Soldiers with body weights that approach the maximal allowable weight as defined by AR 600-9 are also targets of the intervention. The H.E.A.L.T.H. intervention was launched in July 2006. In order to evaluate the H.E.A.L.T.H. intervention, data have been collected via the Internet-based program. Also, a health promotion program was developed to publicize the existence of the website and encourage utilization by Soldiers and Family members of Soldiers at Ft. Bragg. The health promotion program was implemented prior to the launch of the H.E.A.L.T.H. website and exists as a constant health marketing program over the duration of the Internet-based program.

Body

PBRC personnel will report all activities on the grant to members of the Executive Committee in Quarterly and Annual Reports.

This objective has been accomplished. Annual reports outlining the activity and progress of the research have been and will continue to be submitted throughout the duration of the Ft Bragg, HEALTH study.

Annual reports regarding the current status and progress of the *Military Health Behaviors: Promotion of Healthy Weight and Fitness in Career Personnel* study were submitted during May 2004, 2005, 2006, 2007, and 2008. Dr. Williamson recently briefed the contract officer, Andrew Young, Ph.D. on April 29, 2008.

Progress reports are presented at meetings with the Executive Committee. The most recent of these Executive Committee assemblies was conducted in August 2007 and the next meeting is scheduled December 3, 2008 in New Orleans, LA.

Weekly conference calls are held with key personnel at Fort Bragg to monitor the progress of the Internet-based/environmental program. These calls will end in association with the conclusion of the active promotion portion of the HEALTH website on Ft Bragg by PBRC personnel.

PBRC personnel will develop an Internet program with the following components: 1) Education Materials, 2) Weight Maintenance including AR 600-9 tables, and 3) Weight Loss Tools. The status of the website development will be reported regularly to the Executive Committee and PBRC personnel will refine the website to meet specifications at the direction of the Executive Committee.

PBRC has completed this task. The internet program is routinely reviewed and improved. Since the last report in May 2007, several adaptations have been made to improve user experience.

Table 1 identifies new additions and upgrades to the HEALTH website that have occurred since the last annual report.

Table 1. Major adaptations and additions to the H.E.A.L.T.H. Website since 2007 Annual Report.

Feature	Description
Personal Dashboard	A Personal Dashboard was created to replace the previous "my HEALTH" page. The Personal Dashboard provides the user an overview of the Meal Plan, Workout Plan, and Lifestyle Goals. In addition to these overviews, there are also tracking charts that represent calorie counts, weight history, and APFT tracking.
Soldier's Summary Sheet	The Soldier's Summary Sheet is a printable version of the Personal Dashboard. This will enable users to have a physical copy of the progress throughout their use of the HEALTH program.
Modification of the "my H.E.A.L.T.H." link.	The My H.E.A.L.T.H button located at the top of all screens was modified to be a dropdown list. The dropdown list became necessary and requested addition. User feedback instigated this adaptation and has proven to be a well founded change. The dropdown menu offers selectable links to the My Calendar, My Meal Plan, My Workout Plan, My APFT sections of the HEALTH website.
Heart Rate Calculator chart	Previously, the Heart Rate Calculator currently opened as a pop-up window. This became an issue due to the high volume of pop-up blockers that are employed on government computers. By adapting this page to one that is navigated to; users can continue to employ their pop-up blockers and still obtain this data. Additionally, a chart will be added to the page detailing how to determine HR during exercise.
Energy Expenditure	An Energy Expenditure tool was created to provide a generalization to users regarding how many calories they potentially burn in a day without considering exercise. The user will have to have a menu saved on the day that Energy Expenditure is calculated. The tool works by the user choosing activities from the dropdown list and indicating the amount of time the activity was performed.

The additions of these features have allowed for increased user friendliness as well as novelty of use. These features improve the value and user experience when interacting with HEALTH.

PBRC personnel will develop an environmental component of the weight management program at Fort Bragg, with consultation from Preventative Medicine, Nutrition Care Division, Public Affairs Office and Information Services at Womack Army Medical Center. The status of the environmental component will be reported regularly to the Executive Committee and PBRC personnel will

refine the component at the direction of the Executive Committee.

The PBRC research team has completed this task. The environmental promotion program was developed in close consultation with representatives from the Nutrition Care Division (NCD), WAMC Public Affairs Office, and Information Services Office, Ft. Bragg, NC.

Since the time of the May 2007 report, a procedural manual for the promotion of the HEALTH website has been developed and provided to the Executive Committee. This manual addresses the different environments and audiences that a HEALTH field coordinator may find themselves in. Complete with multiple briefings that range from the very brief to the very detailed, the HEALTH promotion manual is a necessary resource for the implementation of the HEALTH website at any location.

The sections of this manual can be found in Table 2:

Table 2. Sections and descriptions of the HEALTH promotions manual.

Section	Description
Target Audience description	This section is provided to help the HEALTH promotion coordinator to identify the target population, to focus on the needs of the population, and to direct specific information to the targeted audience. This will enable the coordinator to deliver the key points of the HEALTH program effectively and consistently to each group.
Live Launch Protocol	In this section scripts are provided so that the HEALTH coordinator is able to deliver consistent information in training sessions and demonstrations of the H.E.A.L.T.H. website. A short and long version of each script is provided. The HEALTH coordinator may choose the version that fits into the allotted presentation time. Key features of the website are mentioned in the long and short versions of the demonstration script.
Managing Resistance	The HEALTH coordinator is provided with information that may help them avoid and possibly change negative or ambivalent opinions to the HEALTH program. Rarely

	does a user agree with everything the health promotion coordinator is promoting. Realistically, a potential user will occasionally offer objections to the representative's proposed plan of action. In all situations the coordinator should avoid attempts to directly persuade the potential user to change.
Problem Solving	This section assists that HEALTH coordinator in solving problems and overcoming issues that may occur during the promotion of the HEALTH program. Promoting website usage is often a challenge. The following the strategies contained in this section may be utilized to aide the coordinator in problem identification, solution generation, and solution implementation.
Tracking, Recording and Reporting HEALTH Promotion Outcomes	In this section the HEALTH coordinator will find the proper resources to track the individual activities of the health promotion strategy. This is necessary to determine the success of those activities and will enable the HEALTH coordinators to set achievable goals. Outcomes correlated with specific activities can be used to guide future promotion strategies and will enhance time- and cost-effectiveness.

Key Research Accomplishments Since May 2007:

- A detailed promotions strategy was developed to promote the H.E.A.L.T.H. website to Soldiers at Fort Bragg and their Family members. These promotions will be implemented at Ft. Bragg through July 2008.
- Website utilization data are being collected at this time and will continue through July 2009.
- While logged into the H.E.A.L.T.H. website, registered users are prompted to complete a satisfaction survey that allows them to rate their experience with the website. Data from this survey are being collected and will be carefully monitored through July 2009.

Reportable Outcomes Since May 2007:

- Stewart, T. (2007) gave an oral presentation entitled, "Demonstration of an Internet/Population-based Weight Management Program for the U.S. Army" at the *Clinical Diabetes Technology Meeting on Oct. 27, 2007*.
- Stewart, et al. (2008) submitted an abstract entitled, "Development and Implementation of an Internet/Population-based Weight Management Program for the U.S. Army to AABT: Association for the Advancement of Behavioral and Cognitive Therapies and will present at the 2008 meeting in Orlando, FL.
- Stewart, et al. (2008) published a paper entitled, "Development of an Internet/Population-based Weight Management Program for the U.S. Army" in the *Journal of Diabetes, Science, and Technology*. The citation for this publication is: Stewart, et al. (2008). Development of an Internet/Population-based weight management program for the U.S. Army. *Journal of Diabetes Science and Technology* 2(1). Pgs 116-126.
- Stewart, et al. is preparing a manuscript entitled, "Efficacy of an Internet/Population-based Weight Management Program for the U.S. Army."
- Williamson, et al. (2008) submitted a paper entitled, "Military Services Fitness Database: Development of a Computerized Physical Fitness and Weight Management Database for the U.S. Army" to *Military Medicine*. The manuscript is under review.

Supporting Data

Since the launch of the Internet program, utilization data has been continuously collected by week and for the last 21 days for Soldiers and civilians and carefully monitored. Figures 1 and 2 depict the number of new and returning Soldiers by week and new and returning civilians by week, respectively. A returning user is defined as one who has logged onto the website more than one time. During the weeks of October 9 and October 16, a sharp increase in the number of new and return Soldiers and civilians occurred due to a mass e-mail delivered post-wide that provided the link to the H.E.A.L.T.H. website with an invitation to login. This increase indicates that a health promotion program may be necessary to increase usage of an Internet-based program.

Soldiers: By Week

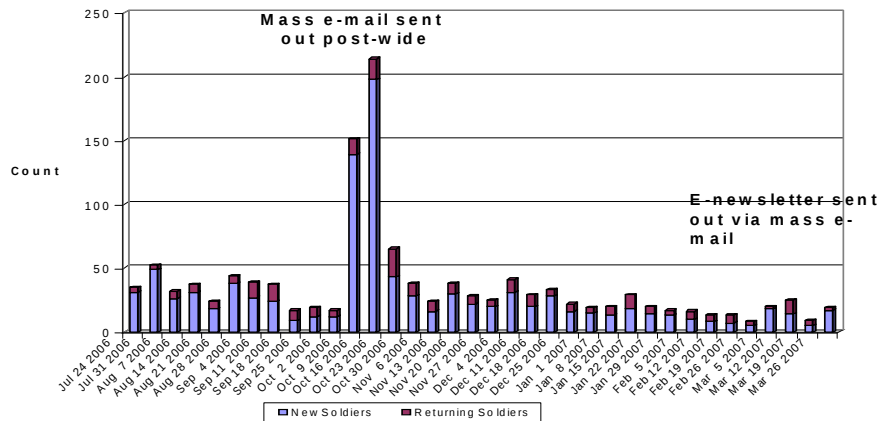


Figure 1: Utilization of the H.E.A.L.T.H. website by Soldiers (by week)

Civilians: By Week

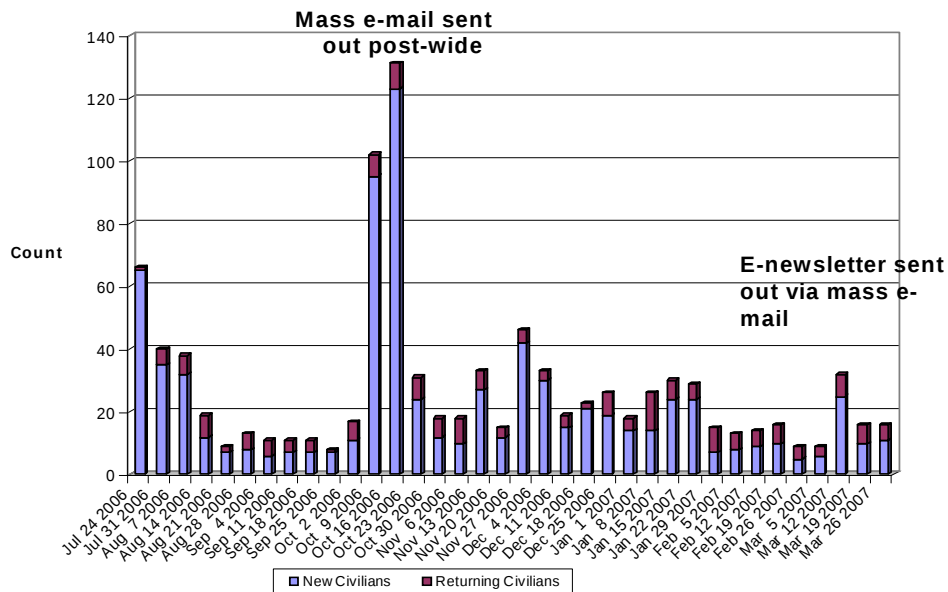


Figure 2: Utilization of the H.E.A.L.T.H. website by Civilians (by week).

In Figure 3 the summary totals for the website are listed. This collection effort segregates users into two main groups (Soldier or Civilian) while also breaking them out into more micro categories. A user having completed jumpstart has done a minimum amount of work, while a person that has completed a certificate

has put forth marginal effort and a person that has completed a survey has done a moderate amount of work to reach that point.

In addition to these other categories are listed that identify the frequency of use by Soldiers and Civilians. The numbers of frequent users (description given above) are listed here and are broken out into two distinct groups: Those having 3 visits or more, and those having over 10 visits.

Summary: Site Totals

	Soldier		Civilian		Total
Registered Users	2017	52%	1862	48%	3879
Completed Jumpstart	1759	87%	1674	90%	3433
Completed Certificate	209	10%	89	5%	298
Completed Survey	228	11%	116	6%	344
3 Visits or more	137	7%	175	9%	312
10 Visits or more	17	1%	30	2%	47

Figure 3: Site totals for website activity

Since the inception of the HEALTH program, a running total of new registrants has been collected. As cited in Figure 3; Figures 4 and 5 provide a linear depiction of the monthly addition of new Soldiers and Civilians, as a break out of the number of users that have completed certificates and surveys.

Soldiers: Cumulative

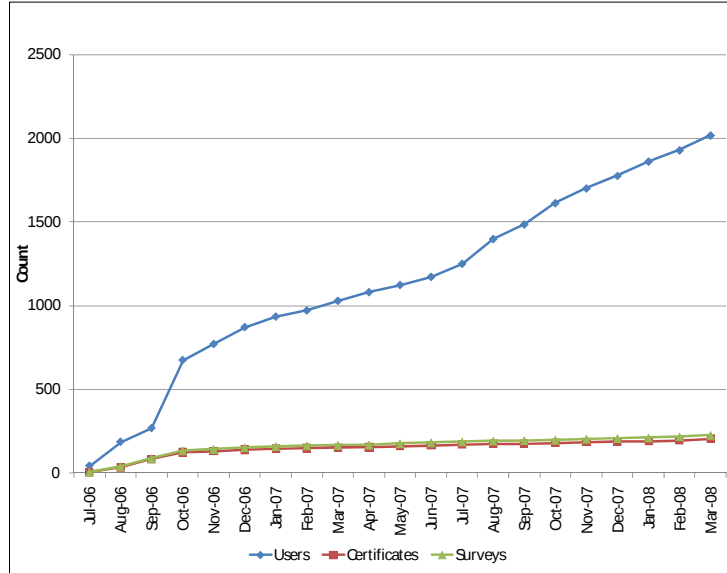


Figure 4: Linear depiction of monthly Solider registrants.

Civilians: Cumulative

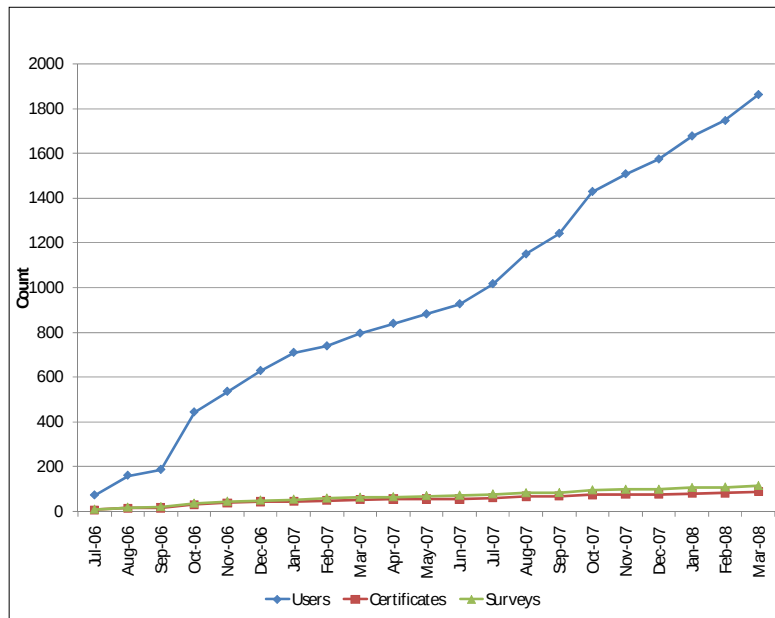


Figure 5: Linear depiction of monthly Civilian registrants.

Figures 6 and 7 show periods of activity among three different groups: New users (blue), frequent users (red), and returning users (green). Figure 6 illustrates these qualities for the Solider population and Figure 7 illustrates these qualities for the Civilian population.

As described in the above section, new users are persons who are creating a new account or logging in for the first time. Frequent users are defined as anyone that has logged onto the HEALTH website more than 3 times. A return user is anyone that has a registered account, but has logged in less than 3 times.

In both Figure 6 and 7 we have juxtaposed known promotional activities in correlation to significant increases in new, frequent, and return usage data. In this manner we can make valid assumptions regarding the effectiveness of promotional communication and activities that may drive new and current users to the HEALTH website.

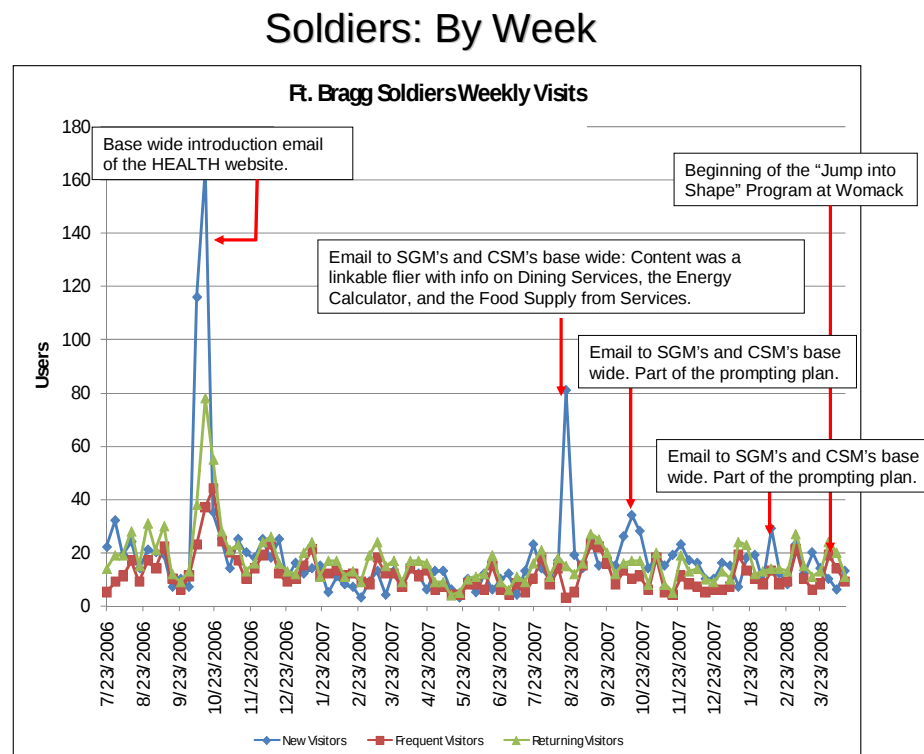


Figure 6: Linear illustration of Soldier usage patterns with regard to promotional activities.

Civilians: By Week

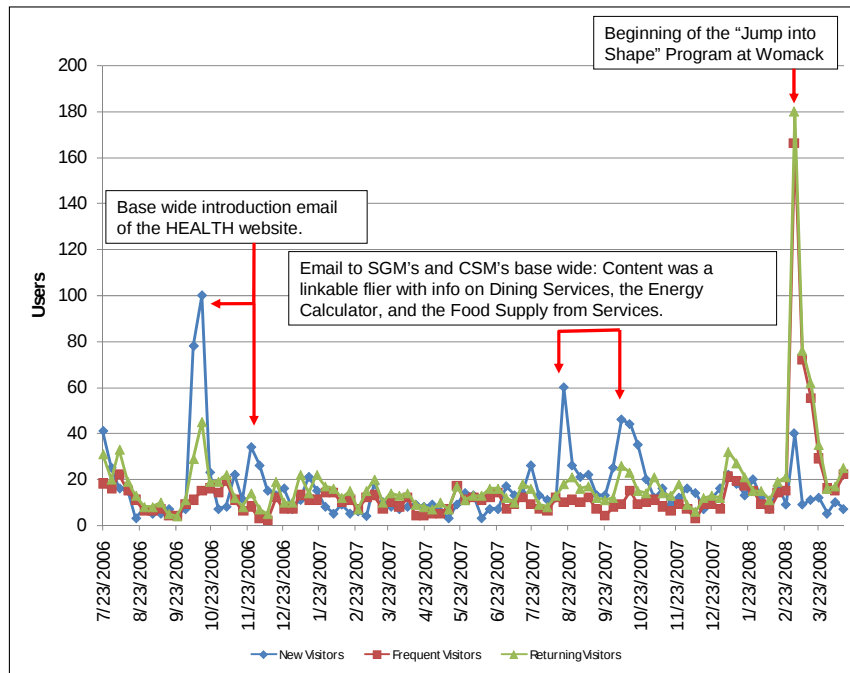


Figure 7: Linear illustration of Civilian usage patterns with regard to promotional activities.