



NAVY AND MARINE CORPS PUBLIC HEALTH CENTER

Analysis of Long-Term Weight Loss Maintenance Using PRIMS Data

ShipShape Group 2 (Classes Ending Jun 07-Nov 07)

Fall 2009

Background

All Navy personnel are required to participate in the semi-annual Physical Fitness Assessment (PFA) process, which includes a Physical Readiness Test (PRT) and a Body Composition Assessment (BCA). Members must meet the standards set forth in OPNAVINST 6110.1H, Physical Readiness Program, or be subject to administrative action.

Commanding officers may send members that fail to meet BCA standards to ShipShape, the BUMED-approved weight management program, as part of the Fitness Enhancement Program (FEP). While many weight loss programs achieve positive short-term weight loss results, almost all individuals that lose weight eventually regain most or all of it. Thus, this evaluation of the ShipShape program seeks to assess its long-term efficacy.

The Physical Readiness Information Management System (PRIMS) is an official personnel record of PFA results that tracks members throughout their military careers. A previous evaluation by the Navy and Marine Corps Public Health Center (NMCPHC) of 90 records demonstrated that PRIMS could indeed be used to track the status of ShipShape participants for a two year follow up period.

Since the fall of 2007, the Navy ShipShape program manager has provided the EpiData Center (EDC) at the NMCPHC with rosters of ShipShape participants that successfully complete the program. BCA results for these members are then examined using PRIMS data that are available in conjunction with the PFA cycles that are held each spring and fall. PRIMS data for each group of ShipShape participants is examined at 1 year, 1 ½ years, and 2 year intervals following completion of the program.

Methods

ShipShape participant rosters include name, social security number (SSN), location of course, and program completion date. Rosters are placed into groups, based on the month and year of program completion. Groups for this evaluation are defined as follows: Group 1 (Dec 06-May 07), Group 2 (Jun 07-Nov 07), Group 3 (Dec 07-May 08), Group 4 (Jun 08-Nov 08), Group 5 (Dec 08-May 09), Group 6 (Jun 09-Nov 09), and Group 7 (Dec 09-May 10).

An analysis of each group is completed by tracking PRIMS data results for three PFA cycles once PRIMS data becomes available for each group a year after the group completion date range. Table 1 shows the EDC data analysis schedule for each group of ShipShape participants through the fall 2012.

Using Microsoft SQL Server 2005, Version 9, each ShipShape group is matched to the corresponding PRIMS PFA cycle data as determined by the program completion range. ShipShape participants are matched on the nine-digit SSN. Participants listed on a roster without a full SSN are matched on the last four digits of their SSN, like-parts of the last name, and the first name. Records

where the last name and last four digits of the SSN match, but the first name does not match, are visually reviewed to identify records that cannot be captured due to a shortened or misspelled name.

PRIMS variables matched to ShipShape participants include *BCParticipationCategory*, which identifies whether or not a person was a participant in the BCA, and if not, identifies the reason for non-participation; *BFOK*, which determines if an individual failed or passed the BCA through measurement of body fat percentage; and *height*; *weight*; and *gender*. An additional variable, *Ht_Wt_Ok*, was created to determine if an individual met the weight for height standards. Individuals who do not meet the Navy’s weight for height standards are required to have additional taping measurements taken (neck, waist, hips, and abdomen) to calculate an estimated body fat percentage that ultimately determines if the member passes the BCA (*BFOK* variable).

In Table 2 a value of “Yes” is assigned for *Ht_Wt_Ok* if the ratio of height for weight meets the values specified in the official Navy tables. A value of “No” is assigned for *Ht_Wt_Ok* if the ratio of height for weight exceeds the values specified in the official Navy tables.

Individuals not meeting the weight for height standards are then assessed for a percent body fat, *BFOK*, to determine if they meet acceptable body fat percent standards.

	Age (years)	
	17-39	40+
Male	22%	23%
Female	33%	34%

For individuals that acquire a score of “Excellent” or “Outstanding” on the PRT, with no single event scored below “Good”, Commanding Officers are authorized to waive the BCA criteria up to the DoD maximum standard for body fat percentage (26% for males and 36% for females). This means that an individual may also be assigned a passing value of “True” for *BFOK*, even if that individual exceeds Navy allowable body fat percentage standards, but meets the BCA waiver criteria specified. Due to this limitation, participants identified as receiving a BCA waiver are identified and excluded from the BCA Passed row.

Duplicate records following the matching of ShipShape participants to PRIMIS data are removed from the analysis. A duplicate record is defined as a record that has the same value for all variables listed. For duplicate records, the record for which the individual is a participant of the BCA is retained over other non-participation reasons. If duplicate records identify a medical waiver, pregnancy, or any other reason besides “participant”, then the pregnancy record, followed by the medical waiver record is retained. All other reasons for non-participation, such as Temporary Assigned Duty (TAD), leave, etc., are grouped into an “Other” category.

Table 1: EDC Analysis Schedule of PRIMS Data

Program Ending Date	Spr 08	Fall 08	Spr 09	Fall 09	Spr 10	Fall 10	Spr 11	Fall 11	Spr 12	Fall 12
Dec 06-May 07 (Group 1)	1	1.5	2							
*Data Analysis		x	x	x						
Jun 07-Nov 07 (Group 2)		1	1.5	2						
*Data Analysis			x	x	x					
Dec 07-May 08 (Group 3)			1	1.5	2					
*Data Analysis				x	x	x				
Jun 08-Nov 08 (Group 4)				1	1.5	2				
*Data Analysis					x	x	x			
Dec 08-May 09 (Group 5)					1	1.5	2			
*Data Analysis						x	x	x		
Jun 09-Nov 09 (Group 6)						1	1.5	2		
*Data Analysis							x	x	x	
Dec 09-May 10 (Group 7)							1	1.5	2	
*Data Analysis								x	x	x
*Receipt by NMCPHC of PRIMS data is generally about 1 PRT cycle later.										

PRIMS data is generally available for analysis about six months after the spring and fall PFA cycles. For example, spring 08 PRIMS data will be analyzed the next fall.

Results

Table 2 shows the results of the analysis for ShipShape participants in Group 2 (classes ending June 2007-November 2007). There were a total of 201 ShipShape participants in Group 2 reported from 12 Medical Treatment Facilities (MTFs). For the fall 2008 PFA cycle, 71.6% (144/201) of the initial ShipShape participants were identified in the PRIMS database, followed by 62.2% (125/201) for the spring 2009 cycle, and 57.2% (115/201) for the fall 2009 cycle. This decreasing percentage of members found in PRIMS could indicate that members separated from the Navy.

Throughout these three PFA cycles, a total of 115 unique individuals were evaluated for BCA, indicating that most individuals found in PRIMS were followed for all three cycles.

Individuals who participated in the BCA passed the weight for height standards 17.5%, 17.6%, and 15.5% of the time for the fall 2008, spring 2009, and fall 2009 PFA cycles, respectively. Furthermore, individuals that did not pass the weight for height standards and who required body fat measurement, were within body fat percentage standards 76.3%, 77.3%, and 73.8% of the time, respectively (excludes those individuals who received a BCA waiver). Thus, the percentage of ShipShape graduates who passed the overall BCA portion of the PFA, as determined by either weight for height standards or body fat percentage measurement, was 79.8%, 80.6%, and 75.7% for the fall 2008, spring 2009, and fall 2009 cycles, respectively (excludes those individuals who passed due to a BCA waiver). At two-year follow up, the rate of “BCA Passed” was 76%.

Table 2: ShipShape and PRIMS matching results for Group 2 (class ending Jun 07-Nov 07).

June 2007-November 2007 ShipShape & PRIMS Matching Results					
MTF (Parent Location)	# of students from ShipShape Registry (% out of student total)	PFA CYCLE: FALL 2008 # of students identified in PRIMS (by MTF %)	PFA CYCLE: SPRING 2009 # of students identified in PRIMS (by MTF %)	PFA CYCLE: FALL 2009 # of students identified in PRIMS (by MTF %)	
Bremerton	9 (4.5%)	6 (66.6%)	7 (77.8%)	7 (77.8%)	
Camp LeJeune	7 (3.5%)	2 (28.6%)	2 (28.6%)	2 (28.6%)	
Charleston	8 (4.0%)	5 (62.5%)	5 (62.5%)	5 (62.5%)	
Great Lakes	12 (6.0%)	9 (75.0%)	7 (58.3%)	7 (58.3%)	
Jacksonville	27 (13.4%)	20 (74.1%)	18 (66.7%)	14 (51.8%)	
Bethesda	10 (5.0%)	6 (60.0%)	5 (50.0%)	2 (20.0%)	
New England	16 (8.0%)	12 (75.0%)	13 (81.2%)	12 (75.0%)	
Patuxent River	5 (2.5%)	4 (80.0%)	3 (60.0%)	3 (60.0%)	
Rota	18 (9.0%)	13 (72.2%)	10 (55.5%)	8 (44.4%)	
San Diego	32 (16.0%)	21 (65.6%)	14 (43.7%)	14 (43.7%)	
Portsmouth	15 (7.5%)	11 (73.3%)	12 (80.0%)	12 (80.0%)	
Yokosuka	42 (20.9%)	35 (83.3%)	29 (69.0%)	29 (69.0%)	
Student Total	201	144	125	115	
BCA Participant	Yes	114 (78.6%)	108 (86.4%)	103 (89.6%)	
	No*	30 (20.8%)	17 (13.6%)	12 (10.4%)	
* Includes one of the following possible reasons: <10 weeks, DEP/OP, Med Waived, Pregnant, TAD, UA, Unknown					
Participant Results	Ht_Wt_ok	Fall 2008 (N=114)	Spring 2009 (N=108)	FALL 2009 (N=103)	
	Yes	20 (17.5%)	19 (17.6%)	16 (15.5%)	
	No	94 (82.4%)	89 (82.4%)	87 (84.5%)	
	Body Fat Ok	Fall 2008 (N=93*)	Spring 2009 (N=88*)	FALL 2009 (N=84*)	
	Yes	71 (76.3%)	68 (77.3%)	62 (73.8%)	
	No	22 (23.4%)	20 (22.5%)	22 (25.3%)	
	*Excludes five individuals who exceeded allowable body fat percentage standards but were waived from the standard BCA criteria due to exceptional PRT performance. Approximately 1.8% of ShipShape participants (5 individuals) who had to be measured for body fat percentage, were waived from the BCA criteria. See discussion limitations.				
	BCA Passed	Fall 2008 (N=114)	Spring 2009 (N=108)	FALL 2009 (N=103)	
	Yes	91 (79.8%)	87 (80.6%)	78 (75.7%)	
	No	22 (19.3%)	20 (18.5%)	22 (21.3%)	
Waiver Received	1 (0.9%)	1 (0.9%)	3 (2.9%)		

Discussion

This analysis included participants from Group 2, which was about twice as large as Group 1.

Completeness of the ShipShape roster registry, which is maintained by the EDC, is contingent upon local program instructors sending rosters to NMCPHC of members that complete the program. Although there has been a gradual improvement in reporting over the PFA cycles, the number of participants in the ShipShape registry remained well below the number of individuals participating in ShipShape programs. Furthermore, rosters for Group 2 that were sent to NMCPHC continued to names with only the last four digits of the SSN and/or the last name of participants, making accurate matching and identifying ShipShape participants in the PRIMS database more difficult.

Decreases or increases in BCA participation between cycles could be due to medical waiver, pregnancy, deployment, leave, inability to locate or match an individual's PRIMS record for a particular PFA cycle, or separation from the Navy. The PFA Fall 2009 cycle only identified 115 out of the original 201 members that completed ShipShape. The precise causes for this attrition is not yet fully understood.

Among members that were assessed at the two-year follow up, a significant percentage (76%) passed their BCA. The Navy appears to be one of the only organizations that has attempted and succeeding in tracking long-term weight loss maintenance.

Conclusion

This evaluation supports the use of PRIMS data to examine the efficacy of the ShipShape weight management program for active duty members. Furthermore, the analysis results support the long-term benefit of the ShipShape intervention.

Comments should be directed to the Program Manager at the Navy and Marine Corps Public Health Center
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The data analysis for this evaluation was completed by a Batelle Corporation contracted epidemiologist assigned to the NMCPHC Epi Data Center