



**ARMY PUBLIC HEALTH CENTER (Provisional)**

5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403

**Technical Report No. S.0032417-16, May 2016  
Epidemiology and Disease Surveillance Portfolio  
Injury Prevention Program**

**Assessment of Health Behaviors, Health Education Interests, and  
Injuries among Employees at the General Leonard Wood Army  
Community Hospital, October 2014 – December 2014**

**Prepared by:  
Anna Schuh, PhD  
Michelle Canham-Chervak, PhD, MPH**

PHC FORM 432-E (MCHB-CS-IP), NOV12

**Approved for public release; distribution unlimited.**

General Medical: 500A, Public Health Survey

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.				
1. REPORT DATE (DD-MM-YYYY) 06-05-2016		2. REPORT TYPE FINAL		3. DATES COVERED (From - To) October 2014-December 2014
4. TITLE AND SUBTITLE Assessment of Health Behaviors, Health Education Interests, and Injuries among Employees at General Leonard Wood Army Community Hospital, October-December 2014			5a. CONTRACT NUMBER n/a	
			5b. GRANT NUMBER n/a	
			5c. PROGRAM ELEMENT NUMBER n/a	
6. AUTHOR(S) Anna Schuh, Michelle Canham-Chervak			5d. PROJECT NUMBER WS.0032417	
			5e. TASK NUMBER n/a	
			5f. WORK UNIT NUMBER n/a	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Public Health Center (Provisional), Aberdeen Proving Ground, MD 21010			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Public Health Center (Provisional), Aberdeen Proving Ground, MD 21010-5403			10. SPONSOR/MONITOR'S ACRONYM(S) APHC(Prov)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT TBD				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT The Ready and Resilient Execution Order 110-13 requires the collection of metrics to assess readiness and resilience among specific Army units. Injuries are a leading barrier to workplace readiness in military as well as civilian populations. Purpose: To assess health behaviors, health education interests, perceived barriers to participation in health information classes, and injuries among employees at the General Leonard Wood Army Community Hospital (GLWACH). Methods: Demographics, health behaviors, health information class interests, and injury history were collected by survey from GLWACH employees, October-December 2014. Descriptive statistics were reported and independent risk factors for injuries were determined through multivariable logistic regression. Results: A total of 380 out of 1,147 employees completed the survey (33% response rate). Respondents reported a prevalence of unhealthy behaviors, such as not enough exercise (58%) and poor sleeping habits (49%). Lack of time was the most frequently reported reason for unhealthy habits. Respondents were most interested in attending health information classes about physical fitness, weight management, nutrition, and stress management in the mornings during midweek. Nearly half (47%, 178 respondents) reported at least one injury in the past 12 months. Leading mechanisms were repetitive overuse (36%), falls (15%), and single twisting/overexertion (14%). Leading activities associated with injury were physical training (24%), walking/hiking (15%), and lifting (11%). Injury risk factors included Active Duty military status, lower education level, tobacco use, overuse of alcohol/drugs, and stress. Conclusions: Health education classes and other health education materials for GLWACH staff should incorporate topics that include respondents' expressed interests, as well as identified modifiable injury risk factors (alcohol and drugs use, tobacco use, poor sleep, stress). Injury prevention activities should focus on prevention of injuries related to physical training, walking/hiking, and lifting. Establishment of surveillance and/or routine review of employee injury, illness, and health behavior data is recommended for monitoring of program effects and collection of data necessary to inform prevention priorities and planning.				
15. SUBJECT TERMS Army, hospital, military, civilian, injuries, injury risk factors, health behaviors, health education, needs assessment				
16. SECURITY CLASSIFICATION OF: UNCLASSIFIED		17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 79	19a. NAME OF RESONSIBLE PERSON Dr. Anna Schuh
a. REPORT Unclassified	b. ABSTRACT Unclassified			c. THIS PAGE Unclassified

**This page intentionally left blank**

## Table of Contents

	<u>Page</u>
<b>1 Summary</b>	<b>1</b>
1.1 Purpose.....	1
1.2 Results.....	1
1.3 Conclusions and Recommendations.....	2
<b>2 References</b>	<b>2</b>
<b>3 Authority</b>	<b>2</b>
<b>4 Background</b>	<b>3</b>
<b>5 Methods</b>	<b>3</b>
5.1 Survey Design and Administration.....	3
5.2 Human Protections Review.....	3
5.3 Data Collection and Analysis.....	4
<b>6 Results</b>	<b>5</b>
6.1 Demographics.....	5
6.2 Health and Health Behaviors.....	6
6.3 Health Education Interests and Barriers.....	11
6.4 Injuries.....	14
6.5 Injury Risk Factors.....	24
<b>7 Discussion</b>	<b>45</b>
7.1 Health Behaviors and Health Education Classes.....	45
7.2 Injuries and Types of Injuries.....	46
7.3 Risk Factors for Injuries.....	47
7.4 Limitations.....	49
<b>8 Conclusions</b>	<b>50</b>
8.1 Conclusions.....	50
8.2 Recommendations.....	50

<b>9</b>	<b>Point of Contact</b>	<b>Page</b>
		<b>51</b>

---

## Appendices

---

A	References .....	A-1
B	Survey Questions .....	B-1
C	Demographic Trends by Gender and Military Status .....	C-1
D	Health Education Topics of Interest by Gender, Military Status, and Occupation .....	D-1
E	Injury Types, Mechanisms, and Associated Activities among Soldiers .....	E-1

## Figures

---

1	Barriers to Healthy Eating .....	8
2	Barriers to Physical Activity .....	9
3	Aspects that Would Improve Physical Activity .....	10
4	Health Education Topics of Interest .....	11
5	Perceived Barriers to Health Education .....	13
6	Sources of Health Education .....	14
7	Injury Types by Gender .....	17
8	Injury Types by Military Status .....	17
9	Injury Causes by Gender .....	19
10	Injury Causes by Military Status .....	20
11	Injury Activities by Gender .....	22
12	Injury Activities by Military Status .....	23
13	On-Duty Injury Activities by Military Status .....	24
D-1	Health Education Topics of Interest by Gender .....	D-2
D-2	Health Education Topics of Interest by Military Status .....	D-3
D-3	Health Education Topics of Interest by Occupation .....	D-4

## Tables

---

1	Survey Demographics .....	6
2	Behavioral Health Survey Responses .....	7
3	Self-Assessed Diet Quality .....	7
4	Satisfaction with Physical Activity/Exercise .....	9
5	Self-Reported Medical Visits .....	10
6	Preferred Days for Health Education Classes or Activities .....	12
7	Preferred Times for Health Education Classes or Activities .....	12

	<u>Page</u>
<b>Tables (cont.)</b>	
8 Self-Reported Injury Frequencies in the Past Twelve Months.....	15
9 Injured Body Areas.....	15
10 Injury Types.....	16
11 Injury Mechanisms .....	18
12 Injury Activities .....	21
13 Injury Risks by Demographic, Health Behavior, and Behavioral Health for GLWACH Employees.....	25
14 Univariate Logistic Regression Results: Independent Injury Risk Factors for GLWACH Employees.....	26
15 Multivariable Logistic Regression Results: Independent Injury Risk Factors for GLWACH Employees.....	29
16 Injury Risks by Demographic, Health Behavior, and Behavioral Health for Active Duty Military GLWACH Employees .....	30
17 Univariate Analysis: Potential Injury Risk Factors for Active Duty Military GLWACH Employees .....	32
18 Multivariable Logistic Regression Results: Independent Injury Risk Factors for Military GLWACH Employees .....	33
19 Injury Risks by Demographic, Health Behavior, and Behavioral Health for Civilian GLWACH Employees .....	34
20 Univariate Logistic Regression Results: Independent Injury Risk Factors for Civilian GLWACH Employees .....	35
21 Multivariable Logistic Regression Results: Independent Injury Risk Factors for Civilian GLWACH Employees .....	37
22 Injury Risks by Demographic, Health Behavior, and Behavioral Health for Male GLWACH Employees .....	38
23 Univariate Logistic Regression Results: Independent Injury Risk Factors for Male GLWACH Employees .....	39
24 Multivariable Logistic Regression Results: Independent Injury Risk Factors for Male GLWACH Employees .....	41
25 Injury Risks by Demographic, Health Behavior, and Behavioral Health for Female GLWACH Employees.....	42
26 Univariate Logistic Regression Results: Independent Injury Risk Factors for Female GLWACH Employees.....	43
27 Multivariable Logistic Regression Results: Independent Injury Risk Factors for Female GLWACH Employees.....	45
C-1 Survey Demographics, Female.....	C-2
C-2 Survey Demographics, Male .....	C-3
C-3 Survey Demographics, Enlisted .....	C-4
C-4 Survey Demographics, Officers.....	C-5

	<b><u>Page</u></b>
<b>Tables (cont.)</b>	
C-5 Survey Demographics, DA Civilians.....	C-6
E-1 Injury Types and Profiles for Soldiers, n=161 Injuries .....	E-1
E-2 Mechanisms of Injury and Profiles for Soldiers, n=161 Injuries.....	E-2
E-3 Injury Activities and Profiles for Soldiers, n=161 Injuries.....	E-3

DRAFT

**Technical Report No. S.0032417-16**  
**Assessment of Health Behaviors, Health Education Interests, and Injuries among**  
**Employees at the General Leonard Wood Army Community Hospital,**  
**October 2014 – December 2014**

## **1 Summary**

---

### **1.1 Purpose**

The purpose of this survey was to (1) define individual health behaviors, health program interests, and perceived barriers to health program participation, and (2) assess injuries, a potential barrier to workplace productivity and readiness for employees at General Leonard Wood Army Community Hospital (GLWACH). Results will be used to guide GLWACH health promotion and injury prevention program planning.

### **1.2 Results**

A total of 380 employees out of 1,147 completed the survey (33 percent response rate). Over half (56 percent) of respondents were female, 47 percent were age 26-39, 45 percent were DA Civilian employees, 27 percent held Master's or Doctorate degrees, and 20 percent were in other medical professions (i.e., clinical providers other than physician, nurse, or medic).

Respondents reported a prevalence of unhealthy behaviors, such as not enough exercise (58 percent) and poor sleeping habits (49 percent). Less than half of respondents met the MyPlate recommendations for daily dairy (43 percent) or fruit intake (17 percent). (MyPlate, sponsored by the United States Department of Agriculture, is a program that provides guidance about nutrition and portion sizes.) Fifty-three percent identified a lack of time as a barrier to better eating habits, and 65 percent said time off during the workday to exercise would improve their physical activity. Interest in health education classes largely followed the reported unhealthy behaviors; topics of greatest interest were adult physical fitness (47 percent), weight management (44 percent), nutrition (43 percent), and stress management (36 percent). Time was again the most common anticipated barrier to participation in these classes for 58 percent of respondents. Respondents were most interested in receiving health information classes about physical fitness, weight management, nutrition, and stress management. Mornings during midweek were the preferred time to attend classes.

Nearly half (47 percent, 178 respondents) reported having at least one injury in the past 12 months. The most common recent injuries were lower extremity sprains and strains from overuse during physical training or sports. Military respondents experienced injuries that primarily resulted from chronic overuse (40 percent) and acute overexertion (14 percent); many injuries to Civilian personnel were due to overuse (28 percent) or falls (23 percent). Risk factors for injuries among all respondents included being Military Active Duty, overusing alcohol or drugs, and being stressed "Often" or "Very Often" in the past month. Physicians experienced a significantly lower risk of injury. Risk factor analysis was stratified for military Status and gender, as well.

## **1.3 Conclusions and Recommendations**

### **1.3.1 Conclusions**

Over three-fourths (78 percent) of respondents said they would be interested in attending health education classes at GLWACH. Lack of time and scheduling were the most frequently reported barriers to attendance of health and wellness activities. Preferred class times were mornings or early evenings (1600-1800) on Wednesdays or Thursdays. Cessation classes for tobacco, alcohol, and other drugs should be considered because these behaviors were identified as injury risk factors among GLWACH employees.

The most common injuries among active duty personnel were sprains and strains to lower extremities resulting from physical training and back strains from lifting heavy objects, consistent with previous investigations of injuries in the military. The most common injuries among Civilian personnel were sprains and strains due to walking and back sprains from lifting. Injury risk factors included Active Duty military status, lower education level, tobacco use, overuse of alcohol/drugs, and stress.

### **1.3.2 Recommendations**

Given that respondents reported receiving health information from the Internet, health professionals, and print materials (books/magazines, professional journals), it may be of value to pursue development of additional methods of health communication.

Health education classes and other health education materials for GLWACH staff should incorporate topics that include respondents' expressed interests. Health promotion activities should also address reported leading barriers to healthy behaviors like lack of time and lack of motivation. Classes should be scheduled at desired times to reduce barriers to attendance.

Health education activities and materials should also address prevention topics for injury risk factors identified among GLWACH staff, such as tobacco use, overuse of alcohol and drugs, poor sleep habits, and stress. Establishment of surveillance and/or routine review of employee injury, illness, and health behavior data would enable ongoing monitoring of program effectiveness and form the basis for future data-driven prioritization of health promotion and prevention activities.

## **2 References**

---

See Appendix A for a listing of references used within this report.

## **3 Authority**

---

The authority for this evaluation is Army Regulation 40-5, paragraph 2-19a (Department of the Army, 2007), in which the Army Public Health Center (Provisional) (APHC(Prov)) is tasked to provide "support of Army preventive medicine activities through consultations, program evaluations, supportive services...in the areas of disease and injury prevention and control."

The Ready and Resilient Execution Order 110-13 (Department of the Army, 2013, paragraph 3.E.3.B.11) requires the collection of metrics to assess readiness and resilience at the individual

and unit level. The Fort Leonard Wood Community Health Promotion Council Operation Order 14-006 (Maneuver Support Center of Excellence, 2014) further specified the establishment of a Unit Health Promotion Team to track issues affecting Soldiers, DA Civilians, and Families, implement timely, local and targeted responses, and enhance readiness to sustain operating tempo. This survey provides a baseline assessment of injury, illness, and health behaviors in the GLWACH population and information necessary to inform prevention program planning for GLWACH staff.

## **4 Background**

---

In the U.S., hospitals have among the highest injury incidence rates across all industries, with a rate of 6.5 injuries per 100,000 full-time employees compared to the average of 3.7 injuries per 100,000 full-time employees across all industries (Bureau of Labor Statistics, 2014). Similarly, the U.S. Army Medical Command has the highest injury rates across the Major Commands (Defense Medical Surveillance System, 2014). Furthermore, Army Civilians in medical occupations had the highest costs associated with workers compensation claims in 2013 (Defense Injury and Unemployment Compensation System, 2015).

A survey was conducted to assist the Health Promotion Team at a U.S. Army hospital, the General Leonard Wood Army Community Hospital (GLWACH), define health promotion program needs and barriers in order to guide health promotion program development and implementation. The survey also captured injury incidence, types, and causes of injuries among GLWACH employees in order to inform prevention efforts on a leading barrier to workplace productivity and readiness.

## **5 Methods**

---

### **5.1 Survey Design and Administration**

The GLWACH and APHC(Prov) collaborated on survey design and contents. GLWACH contributed questions regarding health behaviors (i.e., behavioral health, dietary habits, and physical activity) and barriers to healthy behaviors, and APHC(Prov) members contributed questions about respondents' recent injuries.

The APHC(Prov) entered the survey questions into the Verint Systems Enterprise Edition<sup>®</sup> survey software tool, which generated an electronic link to the survey. GLWACH distributed the survey link to hospital staff via e-mail on 28 October 2014. Survey responses were accepted for 45 days; the survey was closed on 12 December 2014. APHC(Prov) monitored survey responses and reported response rates periodically to the GLWACH Health Promotion Team.

The 49-question survey is included in Appendix B.

### **5.2 Human Protections Review**

Prior to the administration of the survey, the APHC(Prov) PHRB approved this project as public health practice. No names or social security numbers were collected on the survey.

## **5.3 Data Collection and Analysis**

### **5.3.1 Data Collection**

Data collected by survey included:

- Demographic information: gender, age, level of education, and occupation
- Self-assessed health: overall health, dietary and physical activity habits, and barriers to better health behaviors
- Interest in health education activities and classes
- Recent injuries: types, causes, associated activities, and number of limited duty days for respondents' two most physically limiting injuries in the past 12 months. Injury was defined as a physical injury caused either by (1) a single incident or accident (examples include tripping and twisting ankle while marching, falling from a ladder, getting hit by/bumping into an object, injuries due to heat or cold, or injuries resulting from an automobile crash) or by (2) overuse of a body area (examples include running long distances or repeatedly lifting/pulling/moving objects for job tasks or physical training) that resulted in physical damage to the body and limited physical abilities.

### **5.3.2 Data Analysis**

Data were exported from the survey software and analyzed with the Statistical Program for Social Sciences (SPSS<sup>®</sup>), Version 21.0. Data were cleaned in SPSS, which involved removing misclassified injuries from the analysis (e.g., reproductive issues) and re-categorizing "Other" write-in responses into more appropriate response groupings, as needed. Occupations were grouped into categories after the survey was administered, in consultation with members of the GLWACH Health Promotion Team.

Descriptive statistics of survey responses were calculated for demographics, health behaviors, degree of interest in health education classes, and injury history. Selected responses were stratified by gender and military status.

In preparation for multivariable risk factor analysis, the occurrence of at least one injury during the 12 months prior to the survey was coded as a binary variable. Potential risk factors for injuries included in the analysis were demographics (i.e., age, gender, education level, occupational category), unhealthy behaviors (poor eating habits, tobacco use, poor sleeping habits, not enough exercise, overuse of alcohol or drugs, other), and the frequency of behavioral health concerns (feeling stressed in the past month, feeling angered by things outside of one's control in the past month, and feeling like difficulties were piling so high they couldn't be overcome in the past month). Behavioral health concerns were re-coded as binary variables with the affirmative answer corresponding to "Often" or "Very Often" responses.

Risk ratios comparing the proportion injured to a reference parameter, 95 percent confidence intervals (CIs), and the Mantel-Haenszel chi-square significance (two-tailed p-values) are reported for each potential categorical risk factor. For variables with multiple categories, the reference parameter was usually chosen as the category with the lowest injury rate, to identify whether there were any comparatively high injury proportions. However, if the category with the lowest injury rate had a small sample size, the category with the next highest injury percentage was chosen. For the

Occupation categories, respondents in non-medical fields were used as the reference parameter, to identify whether any of the medical professions had higher injury proportions. For the binary health behavior and behavioral health variables, those who did not report the behavior were always used as the reference group.

Variables were entered into a backward-stepping multivariable logistic regression analysis if they were found to be significant in univariate logistic regression assessments of injury risk ( $p \leq 0.10$ ). If there were discrepancies in the univariate regression results between the significance of the overall variable and the significance of individual variables, the multivariable analysis was conducted both with and without that variable included and the final model with the best fit (as measured by the Cox & Snell R-squared statistic) was used. Odds ratios and 95 percent CIs for variables remaining in the final multivariable models ( $p \leq 0.05$ ) are reported. Regression analyses were conducted separately for Active Duty Military, Civilian, male, and female subgroups of respondents. When group sizes were small, pre-established categories were combined for subgroup analysis; for example, the “18-25” and “26-39” age categories for Civilian employees were combined because only one of the Civilian respondents was between 18 and 25 years old.

## 6 Results

---

There were 380 GLWACH staff members (military and Civilians) who completed the questionnaire; based on a population of 1,147 employees (420 military; 727 Civilians) at GLWACH in November 2014, this represents a response rate of 33.1 percent. Twenty-three percent of Civilian staff and 49 percent of military staff participated in the survey.

### 6.1 Demographics

Table 1 provides detailed demographic information. Among those surveyed, over half were women (56 percent), 91 percent were over age 26, there was a mix of DA Civilian and military respondents (45 percent and 54 percent, respectively), an even distribution of education levels was represented, and the leading occupational category was “Other Medical” (20 percent). “Other Medical” represents those medical professionals who could not be categorized into the broad categories of Administration, Nurse, Medic, Technician, Physician, or Pharmacy, and includes behavioral health professionals, physician assistants, physical therapists, occupational therapists, optometrists, and dentists. “Technician” occupations include operating room specialists, nursing specialists, and radiology specialists. “Other” occupations include mechanics, laboratory scientists, transportation, and medical technologists. “Other” military status responses include contractors, retired military, officer candidates, and Department of Defense employees.

Further assessment of demographics by gender and military status are provided in Appendix C.

**Table 1. Demographics of Survey Respondents (n=380)**

Variable	Categories	Military	Civilian	All Respondents n (%)
Gender	Female	71 (35%)	141 (83%)	214 (56%)
	Male	134 (65%)	28 (17%)	166 (44%)
Age	18-25	32 (16%)	1 (1%)	34 (9%)
	26-39	109 (53%)	34 (20%)	145 (47%)
	40-54	61 (30%)	76 (45%)	138 (36%)
	55+	3 (2%)	58 (34%)	63 (17%)
Military Status	DA Civilian	-	169 (100%)	169 (45%)
	Enlisted	118 (58%)	-	118 (31%)
	Officer	87 (42%)	-	87 (23%)
	Other	-	-	6 (2%)
Education Level	GED or High School	49 (24%)	37 (22%)	86 (23%)
	Associate's	39 (19%)	41 (24%)	80 (21%)
	Bachelor's	42 (21%)	19 (11%)	83 (22%)
	Master's or Doctorate	65 (32%)	33 (20%)	102 (27%)
	Other Professional Degree	10 (5%)	39 (23%)	29 (8%)
Occupation	Other Medical Profession	14 (7%)	39 (23%)	77 (20%)
	Nurse	31 (15%)	30 (18%)	61 (16%)
	Administration	47 (23%)	2 (2%)	53 (14%)
	Medic	62 (30%)	13 (8%)	50 (13%)
	Technician	18 (9%)	19 (11%)	38 (10%)
	Physician	22 (11%)	1 (1%)	23 (6%)
	Pharmacy	3 (2%)	5 (3%)	8 (2%)
	Other or Unspecified	8 (4%)	59 (35%)	70 (18%)

## 6.2 Health and Health Behaviors

Sixteen survey questions addressed respondents' self-evaluation of their health.

### 6.2.1 Overall Health

A variety of general health questions revealed the following about the survey respondents:

- Ninety percent of respondents considered themselves healthy.
- Of the 10 percent who did not consider themselves healthy, 95 percent were interested in becoming healthier.
- Faith plays a part in 63 percent of respondents' overall health.
- Most respondents (88 percent) do not have health conditions that completely prevent participation in physical fitness programs.
- Fifty-eight percent reported that they do not get enough exercise.

- Forty-nine percent said that they have poor sleeping habits.
- Forty-three percent reported poor eating habits.
- Eighteen percent identified themselves as tobacco users.
- Two percent self-reported overuse of alcohol or drugs.
- Two percent reported other unspecified unhealthy behaviors.
- Only four percent reported no unhealthy behaviors.

## 6.2.2 Behavioral Health

Some behavioral health questions were posed to survey respondents. When asked whether they had felt nervous or stressed in the past month, 37 percent responded “Sometimes” and 31 percent said “Fairly Often” or “Very Often.” When asked if they felt angered because of things outside their control in the past month, 37 percent responded “Sometimes” and 22 percent said “Fairly Often” or “Very Often.” When asked whether they felt that difficulties were piled up so high that they could not overcome them, 30 percent said “Never” and 16 percent said “Fairly Often” or “Very Often.” Table 2 shows all responses for these behavioral health questions.

**Table 2. Behavioral Health Survey Responses (n=380)**

Question	Very Often	Fairly Often	Sometimes	Almost Never	Never
In the past month, how often have you felt nervous or stressed?	38 (10%)	81 (21%)	141 (37%)	82 (22%)	38 (10%)
In the past month, how often have you been angered because of things that were outside of your control?	22 (6%)	61 (16%)	141 (37%)	101 (27%)	55 (15%)
In the past month, how often have you felt difficulties were piling up so high that you could not overcome them?	21 (6%)	37 (10%)	93 (25%)	114 (30%)	115 (30%)

## 6.2.3 Diet Quality

When asked to rate their overall diet quality as “Very Good,” “Good,” “Fair,” or “Poor,” 255 respondents (67 percent) responded “Very Good” or “Good.” Responses are shown in Table 3.

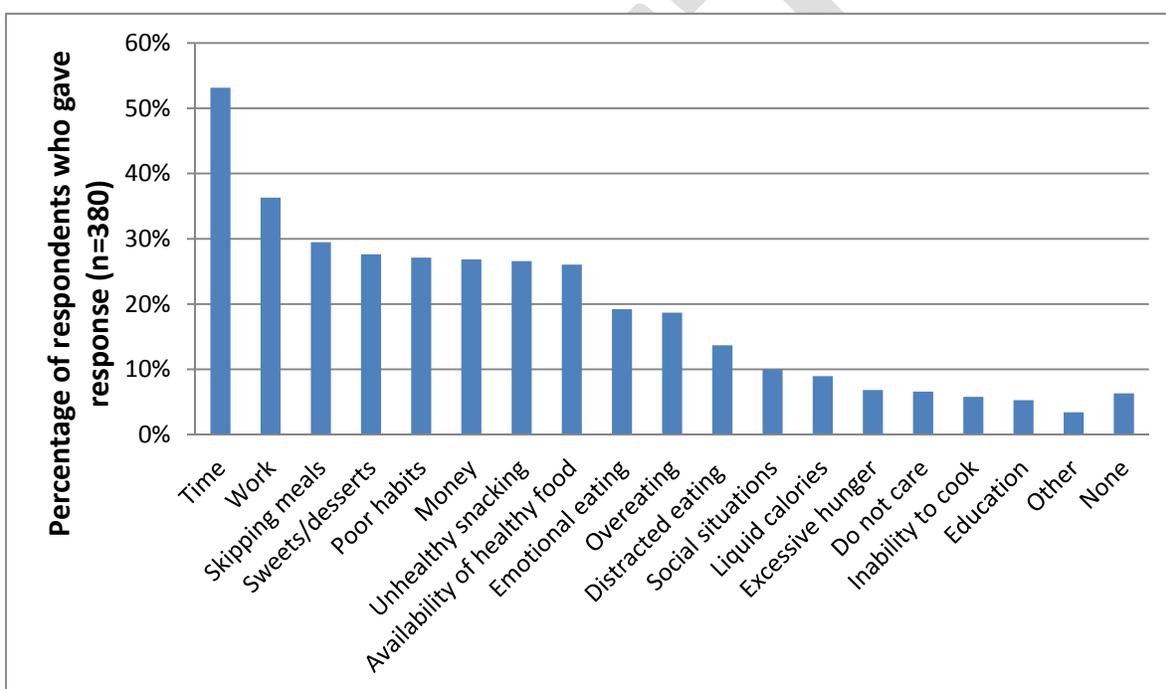
**Table 3. Self-assessed Diet Quality (n=380)**

Survey question	Responses	n (%)
Please rate the overall quality of your current diet.	Very Good	47 (12%)
	Good	208 (55%)
	Fair	116 (31%)
	Poor	9 (2%)

When asked whether they adhere to the following MyPlate recommendations at typical meals, the proportion with affirmative responses were as follows:

- One-quarter plate lean meats: 63 percent
- One-quarter plate non-starchy vegetables: 62 percent
- One-quarter plate whole grains: 53 percent
- Low-fat dairy: 43 percent
- One-quarter plate fruits: 38 percent
- None of the above: 15 percent

Respondents were also asked to identify their biggest barriers to healthy eating. They were allowed to select all responses that applied. Time (53 percent), work (36 percent), and skipping meals (29 percent) were the top three responses. Figure 1 provides further details for these responses. “Other” responses included dislike of vegetables, allergies, food texture, and food consistency.



**Figure 1. Barriers to Healthy Eating**

#### 6.2.4 Physical Activity

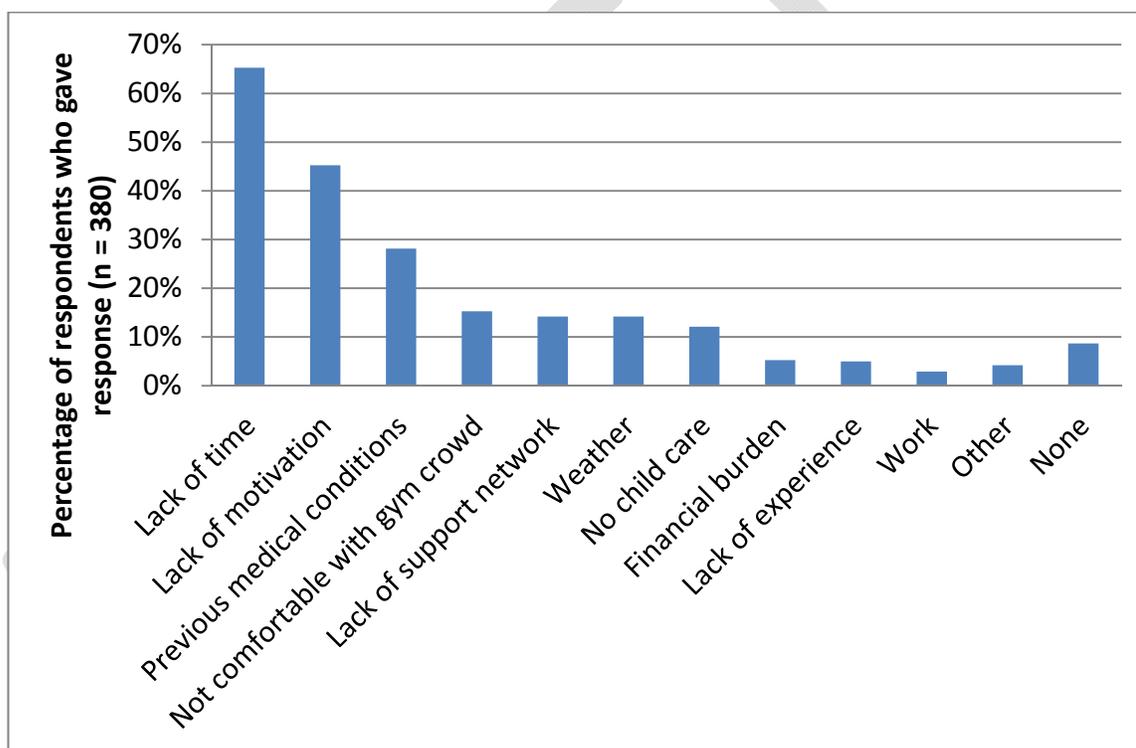
Twelve percent (n=44) of respondents reported having health conditions that COMPLETELY prevent them from participating in physical fitness programs.

Respondents were asked how satisfied they were with their physical activity/exercise; most responded “Somewhat Satisfied” (31 percent) or “Somewhat Dissatisfied” (29 percent). All responses are shown in Table 4.

**Table 4. Satisfaction with Physical Activity/Exercise (n=380)**

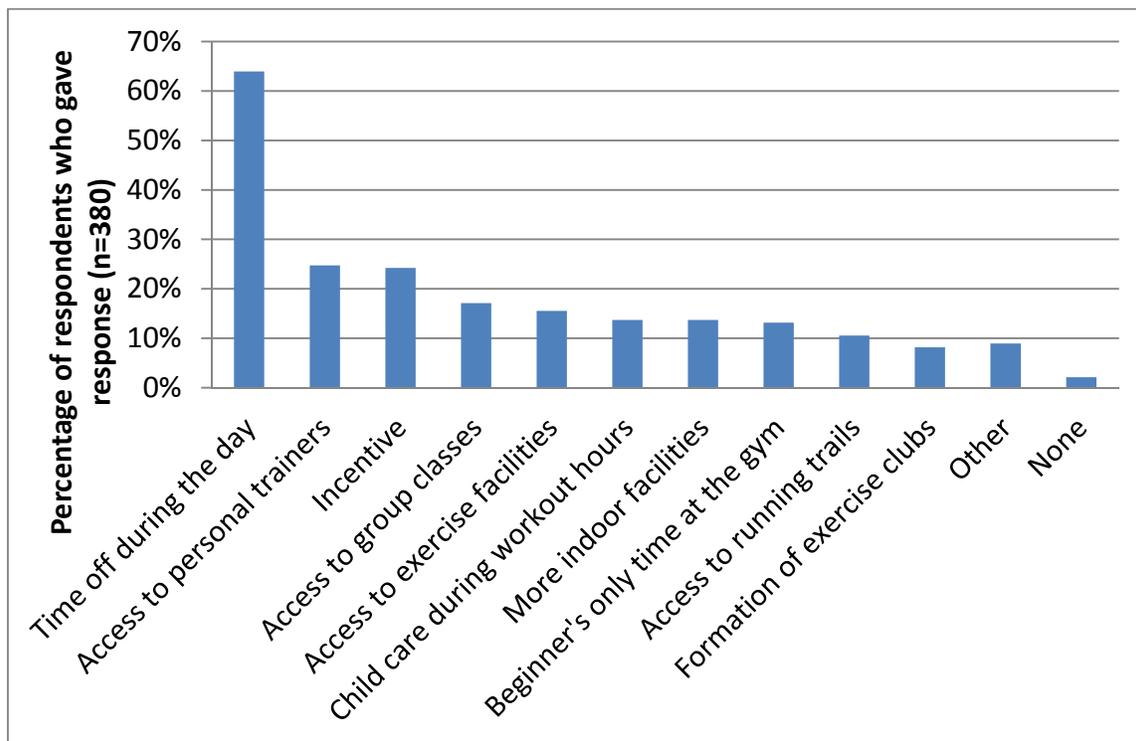
Survey question	Responses	n (%)
How satisfied are you with your physical activity/exercise?	Very Satisfied	44 (12%)
	Somewhat Satisfied	116 (31%)
	Neither Satisfied or Dissatisfied	62 (16%)
	Somewhat Dissatisfied	111 (29%)
	Very Dissatisfied	47 (12%)

Barriers to physical activity are shown in Figure 2. Lack of time (65 percent), lack of motivation (45 percent), and previous medical conditions (28 percent) were the most prevalent responses. “Other” responses included timing of classes, lack of transportation, and unspecified fatigue. Respondents were asked to select all that applied.



**Figure 2. Barriers to Physical Activity**

Figure 3 shows the responses to a question about factors that would improve their physical activity levels. Respondents were asked to select all that applied. Time off during the day (64 percent), access to personal trainers (25 percent), and incentive (24 percent) were the top responses. “Other” responses included time (not necessarily time off work), motivation, and improved medical conditions.



**Figure 3. Aspects that Would Improve Physical Activity**

### 6.2.5 Medical Visits

Table 5 shows the percentage of respondents who answered that they or their family members visited various types of medical providers each year. Respondents were not asked to differentiate which visits were for themselves and which were for family members. Most respondents (74 percent) reported having Tricare.

**Table 5. Self-reported Medical Visits**

Annual medical visits	Provider	Percentage who visited at least once (self and/or family members)
	Primary care provider	353(93%)
	OB/GYN	202(53%)
	Urgent care	135(36%)
	Pediatrics	122(32%)
	Behavioral health	70(18%)
	Pastor/chaplain	42(11%)
	Other (e.g., dentist, optometrist, chiropractor, physical therapist, orthopedist, etc.)	125(33%)

### 6.3 Health Education Interests and Barriers

Several questions assessed respondents' level of interest in health education classes and activities.

#### 6.3.1 Topics of Interest

When asked which health education topics respondents would be most interested in, the most common responses were adult physical fitness (47 percent), weight management (44 percent), nutrition (43 percent), and stress management (36 percent). Respondents were asked to select all that applied, and these results can be seen in Figure 4. "Other" responses included healthy cooking, physical fitness for back injury, how to cope with taking care of an aged parent, and fitness classes. Health education topics of interest by gender, military status, and occupation are presented in Appendix D.

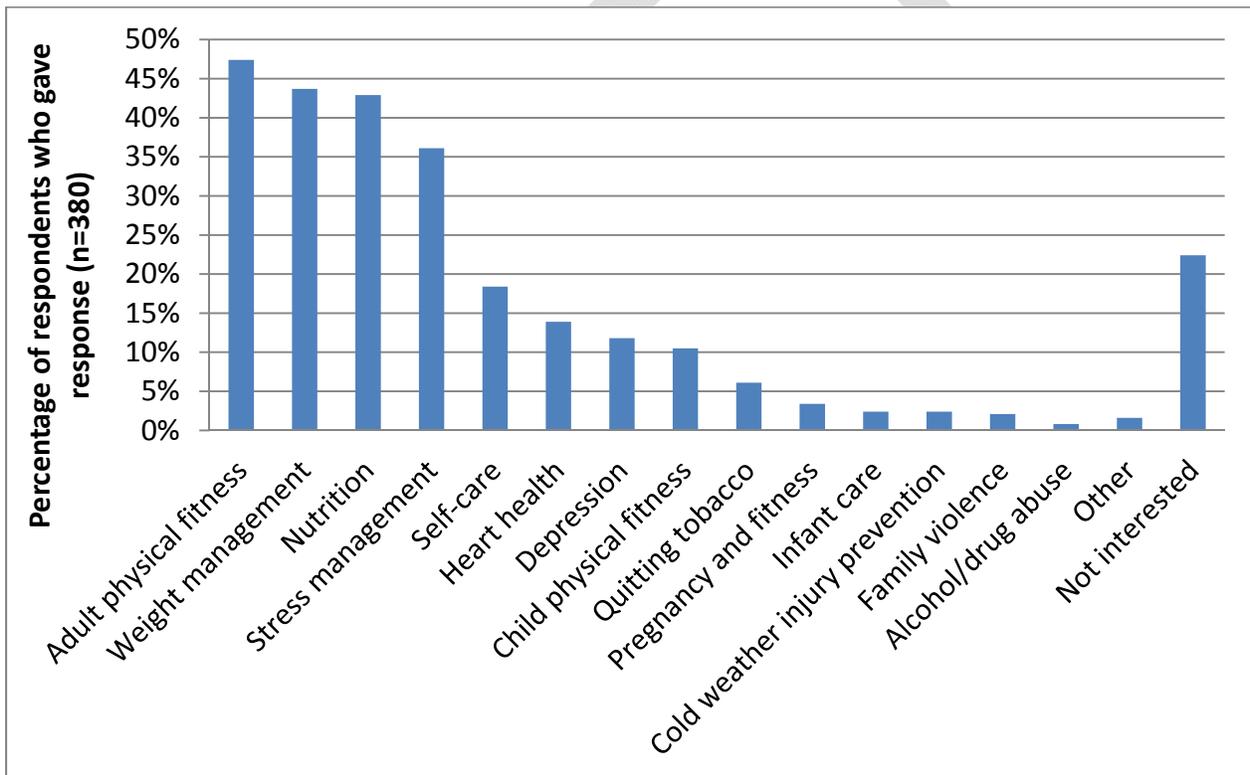


Figure 4. Health Education Topics of Interest

### 6.3.2 Scheduling

When asked to select all days and times when classes were preferred, the most frequent responses were Wednesdays and mornings, though early evenings and other mid-week days were also frequently selected. Detailed breakdowns of day and time preferences across demographic groups are shown in Tables 6 and 7, respectively. Similar patterns were also seen across various occupations.

**Table 6. Preferred Days for Health Education Classes or Activities**

Day	Overall	Male	Female	Enlisted	Officer	Civilian
Monday	217 (57%)	49%	63%	61%	46%	61%
Tuesday	197 (52%)	45%	57%	52%	51%	54%
Wednesday	<b>232 (61%)</b>	<b>54%</b>	<b>67%</b>	<b>63%</b>	55%	<b>64%</b>
Thursday	219 (58%)	52%	62%	58%	<b>59%</b>	59%
Friday	184 (48%)	43%	52%	55%	38%	50%
Saturday	101 (27%)	23%	29%	25%	31%	26%
Sunday	55 (15%)	13%	15%	12%	21%	14%

Note: Preferred day for each demographic is in bold.

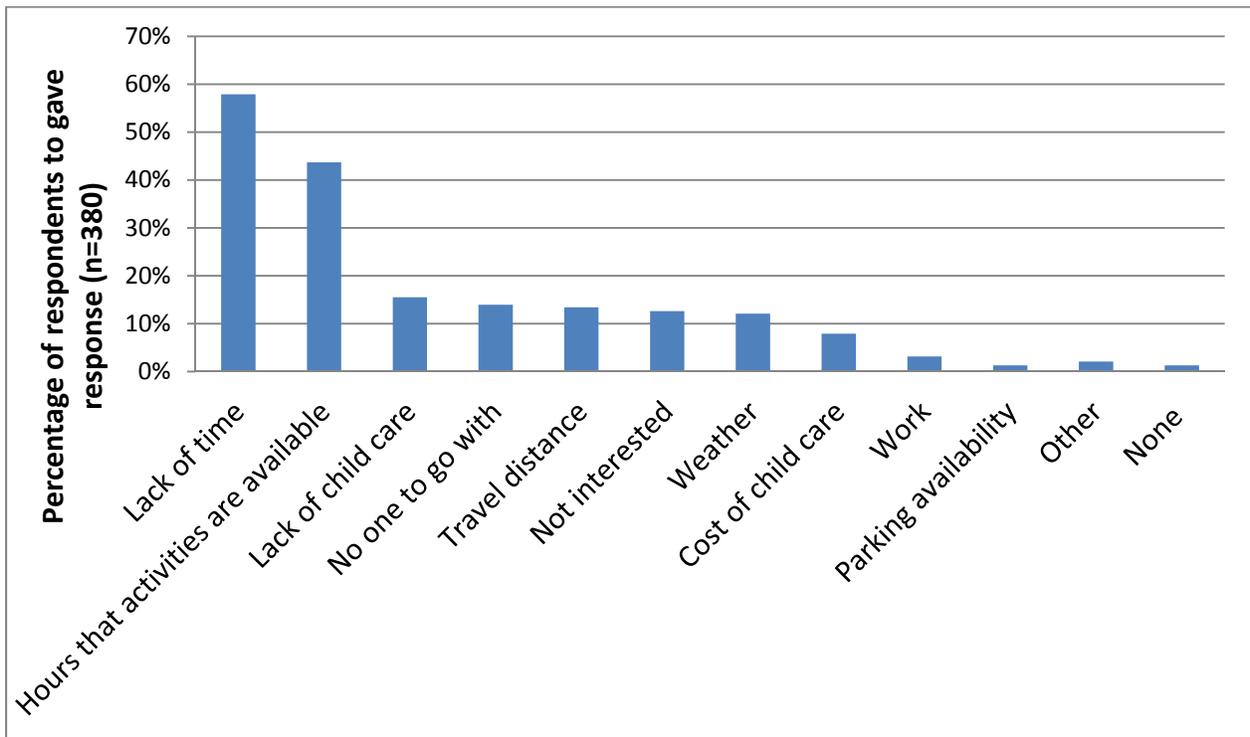
**Table 7. Preferred Times for Health Education Classes or Activities**

Time	Overall	Male	Female	Enlisted	Officer	Civilian
Morning	<b>155 (41%)</b>	<b>42%</b>	40%	<b>46%</b>	<b>39%</b>	<b>55%</b>
Afternoon	126 (33%)	36%	31%	40%	25%	46%
Evening (1600-1800)	126 (33%)	22%	<b>42%</b>	24%	<b>39%</b>	53%
Evening (1800-2000)	74 (19%)	16%	22%	15%	23%	30%

Note: Preferred time for each demographic is in bold.

### 6.3.3 Barriers to Health Education Participation

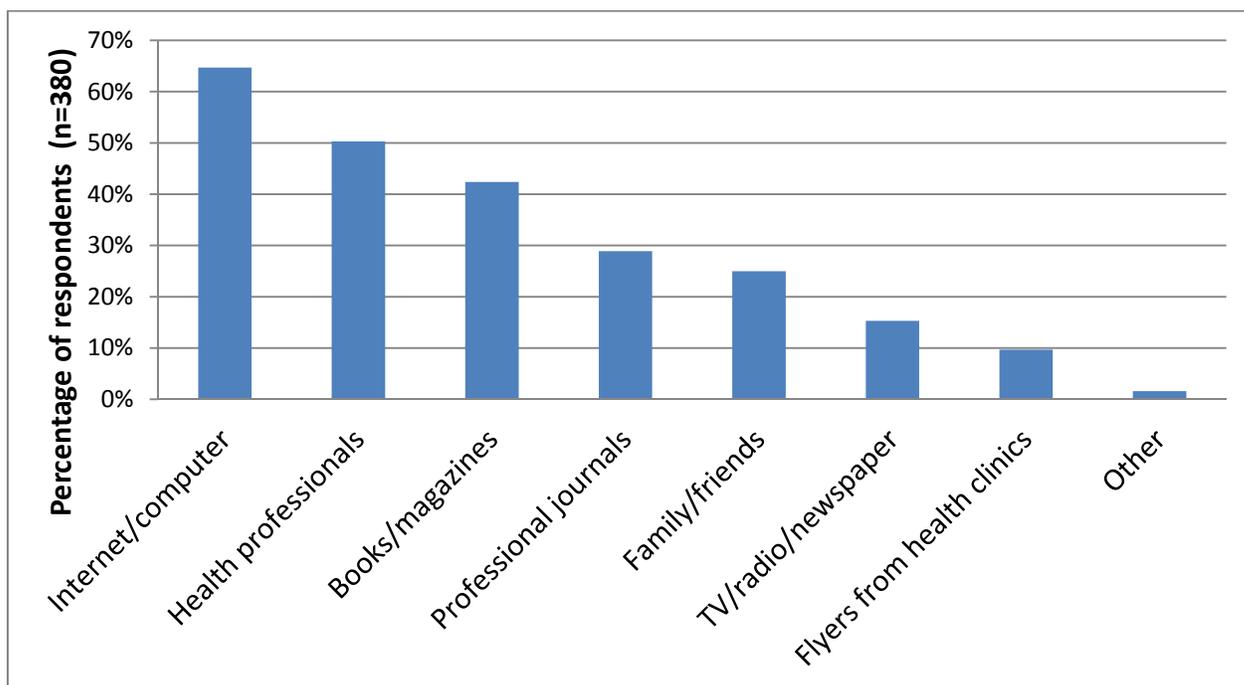
Respondents were asked to identify all applicable anticipated barriers to their future participation in health education classes and activities. The top two responses were similar: a lack of time (58 percent) and hours that the activities are available (44 percent). All responses can be seen in Figure 5. “Other” responses included no showers in gym, physical profile, and lack of transportation.



**Figure 5. Perceived Barriers to Health Education**

#### **6.3.4 Sources of Health Information**

The Internet was identified by respondents as the most common current source for health information (65 percent), followed by health professionals (50 percent) and books/magazines (42 percent), as shown in Figure 6. When military status was considered (data not shown), officers were most likely to answer that they received information from professional journals; otherwise, these trends followed for both genders and other military statuses. Respondents were asked to select all that applied.



**Figure 6. Sources of Health Information**

## 6.4 Injuries

Twenty-one questions asked respondents about injuries they experienced in the past 12 months.

### 6.4.1 Overall

Nearly half (47 percent, 178 respondents) reported having at least one injury in the past 12 months; on average, 3.5 GLWACH staff were injured per 100 personnel per month. The average military injury rate was 4.5 per 100 personnel per month. The average Civilian injury rate was 3.2 injured per 100 personnel per month. Table 8 shows the frequency of injured employees in the 12 months prior to survey administration by gender and military status.

Looking at injury counts, respondents were asked how many injuries they had experienced (0, 1, 2, or 3+). Assuming all respondents who answered that they experienced “three or more injuries” in the past twelve months (n=23) represented exactly three injuries, this survey of GLWACH employees observed a total of 274 injuries, or an estimated 6.0 injuries per 100 employees per month. The estimated Civilian injury rate was 4.3 injuries per 100 Civilian employees per month and the estimated military injury rate was 7.4 injuries per 100 military employees per month.

Regarding duty status, 44 percent of injuries occurred on duty or during work hours, while 43 percent occurred off duty or after work hours and 13 percent of respondents were unsure when the injury occurred. Seventy-nine percent reported seeing a medical professional for care following their injury.

**Table 8. Injury Frequency Among GLWACH Employees: Distribution by Sex and Job Category (Past 12 Months)**

	One Injury (n=105)	Two Injuries (n=50)	Three or More Injuries (n=23)	Total Injured One or More Times (n=178)
Male	43 (41%)	25 (50%)	15 (65%)	83 (47%)
Female	62 (59%)	25 (50%)	8 (35%)	95 (53%)
Enlisted	38 (36%)	20 (40%)	13 (57%)	71 (40%)
Officer	23 (22%)	10 (20%)	7 (30%)	40 (22%)
DA Civilian	42 (40%)	20 (40%)	3 (13%)	65 (37%)
Other	2 (2%)	0	0	2 (1%)

Among the 178 injured one or more times in the previous 12 months, more detailed information was obtained on the first- and second-most physically limiting injuries (n=251). Tables 9 through 11 and Figures 7 through 13 summarize this information.

#### 6.4.2 Body Areas

Injured body areas resulting from reported first- and second-most debilitating injuries in the past 12 months are summarized in Table 9, overall and by major demographic category. Knee (22 percent), lower back (17 percent), and shoulder injuries (9 percent) were most common overall. Injuries to women were more evenly distributed across body areas than injuries to men, but lower extremity injuries were predominant for both sexes. Knee injuries were most common among military (25-26 percent) and lower back injuries were most common among Civilians (20 percent).

“Other” body areas included wrist (3 percent), upper back (2 percent), elbow (2 percent), spine (2 percent), upper arm (2 percent), upper leg (2 percent), chest/ribs (1 percent), abdomen (0 percent), and lower arm (0 percent).

**Table 9. Injured Body Areas, n=251 Injuries**

	Knee	Lower Back	Shoulder	Hip	Ankle	Foot	Head	Neck	Lower Leg	Hand	Other
Overall	54 (22%)	44 (17%)	22 (9%)	20 (8%)	18 (7%)	18 (7%)	10 (4%)	10 (4%)	9 (4%)	8 (3%)	39 (16%)
Male	38 (26%)	24 (17%)	11 (8%)	11 (8%)	6 (4%)	5 (3%)	1 (<1%)	3 (2%)	9 (6%)	6 (4%)	30 (21%)
Female	16 (15%)	19 (18%)	11 (10%)	9 (8%)	12 (11%)	13 (12%)	9 (8%)	7 (7%)	0	2 (2%)	9 (8%)
Enlisted	26 (25%)	11 (11%)	7 (7%)	6 (6%)	9 (9%)	8 (8%)	6 (6%)	3 (3%)	8 (8%)	6 (6%)	14 (13%)
Officer	15 (26%)	14 (25%)	8 (14%)	4 (7%)	4 (7%)	0	1 (2%)	3 (5%)	1 (2%)	1 (3%)	6 (11%)
DA Civilian	13 (15%)	18 (20%)	7 (8%)	9 (10%)	5 (6%)	10 (11%)	3 (3%)	4 (5%)	0	1 (1%)	18 (20%)

### 6.4.3 Injury Types

Reported injury types are shown in Table 10. Sprains and strains were the most common injury type among respondents (29 percent), followed by tears (16 percent) and arthritis (7 percent). “Other” responses included bone spur and dental problems.

The distribution of injury types by gender and military status are shown in Figures 7 and 8. The patterns observed for all respondents generally held across all demographics.

Injury types and resulting profiles and limited duty days specifically for Soldiers are presented in Appendix E. Sprain/strains were the leading cause of temporary profiles and tears resulted in the most permanent profiles.

**Table 10. Injury Types, n=251 Injuries**

Injury Type	Frequency
Sprain/strain	73 (29%)
Tear (muscle/ligaments/meniscus/cartilage)	41 (16%)
Arthritis	17(7%)
Dislocation	14 (6%)
Blunt force trauma	13 (5%)
Fracture/break	11 (4%)
Nerve injury	8 (3%)
Other/unspecified Overuse	7 (3%)
Fasciitis	7 (3%)
Spinal Injury (e.g., slipped or bulging disc)	6 (2%)
Knee Overuse	6 (2%)
Bursitis	5 (2%)
Abrasion	4 (2%)
Cut/laceration	4 (2%)
Lower Back Overuse	3 (1%)
Tendinitis	3 (1%)
Unknown	6 (2%)
Other	5 (2%)
Total	251 (100%)

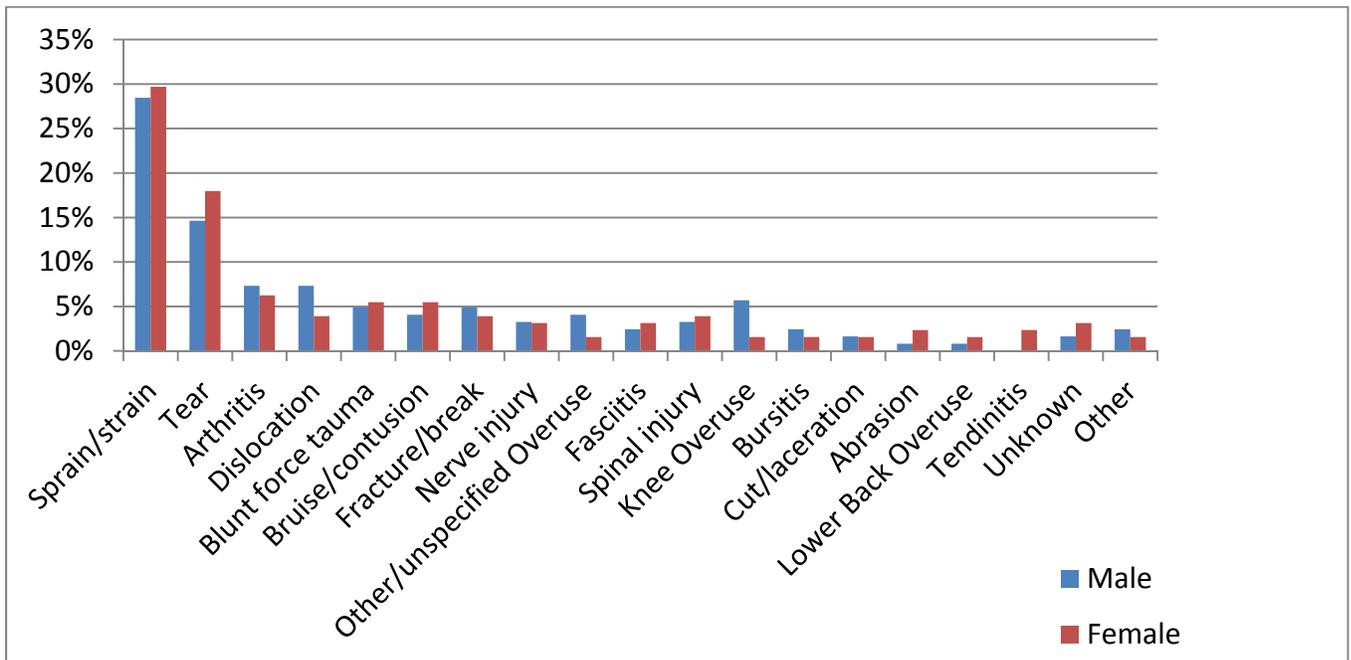


Figure 7. Injury Types by Gender

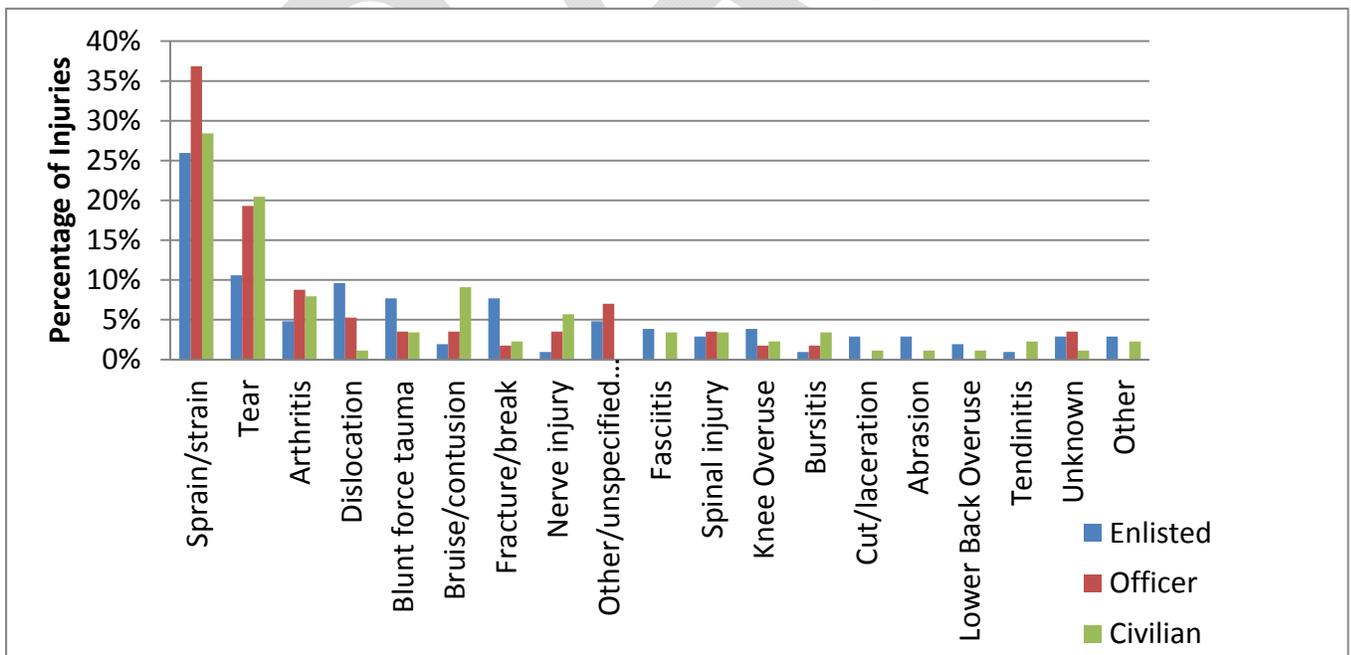


Figure 8. Injury Type by Military Status

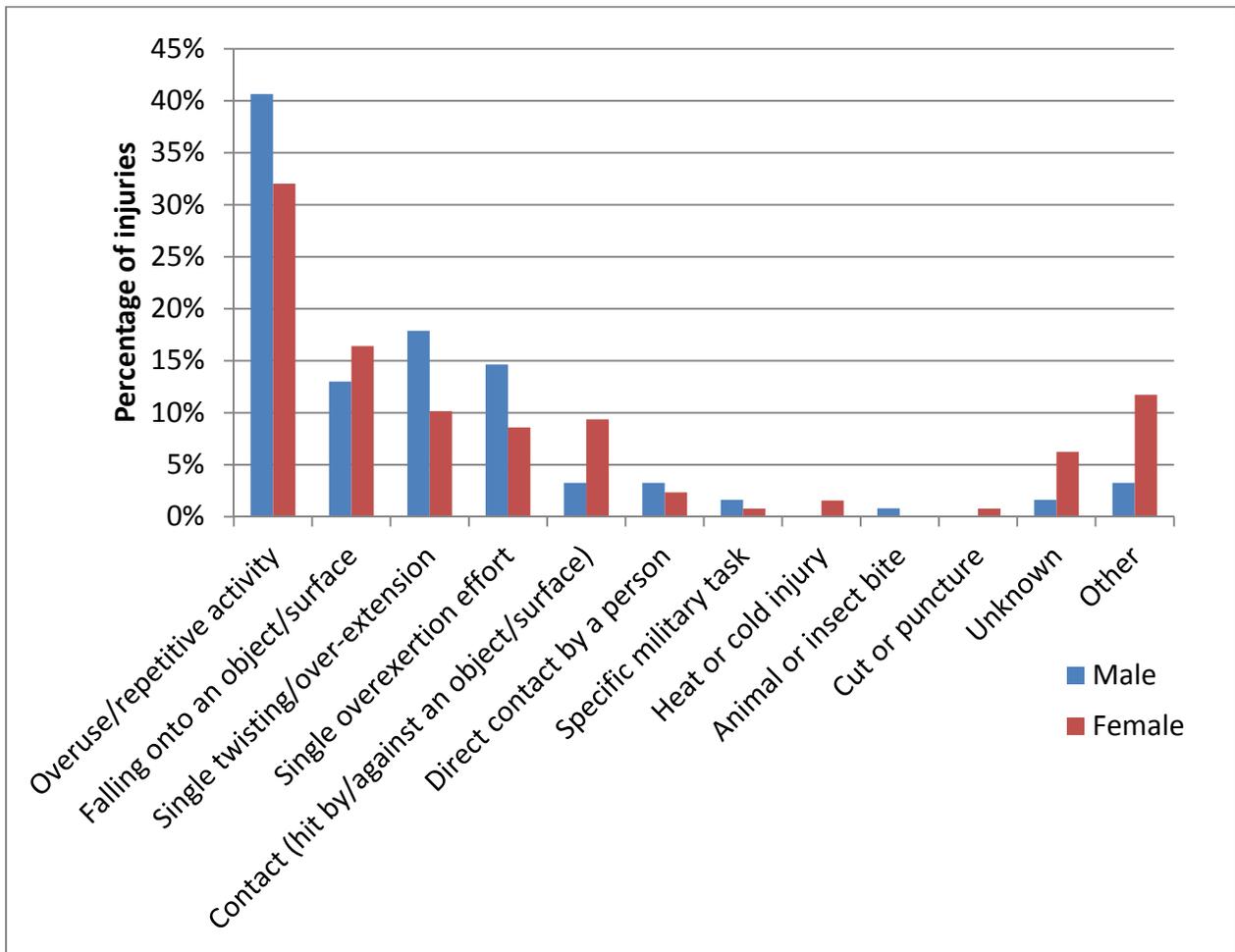
#### 6.4.4 Mechanisms of Injuries

Mechanisms of reported injuries are shown in Table 11. Overuse and repetitive activities were the most common mechanism of injury. Many of these injuries were further specified as associated with running (n=36, 40 percent of overuse injuries) and lifting heavy objects (n=13, 14 percent). Injuries from contact (hit by an object or against a surface) were varied; some descriptions included: wall, hammer, printer, and vehicle engine firewall. The three reported injuries associated with military tasks occurred during combatives training, parachuting, and land navigation.

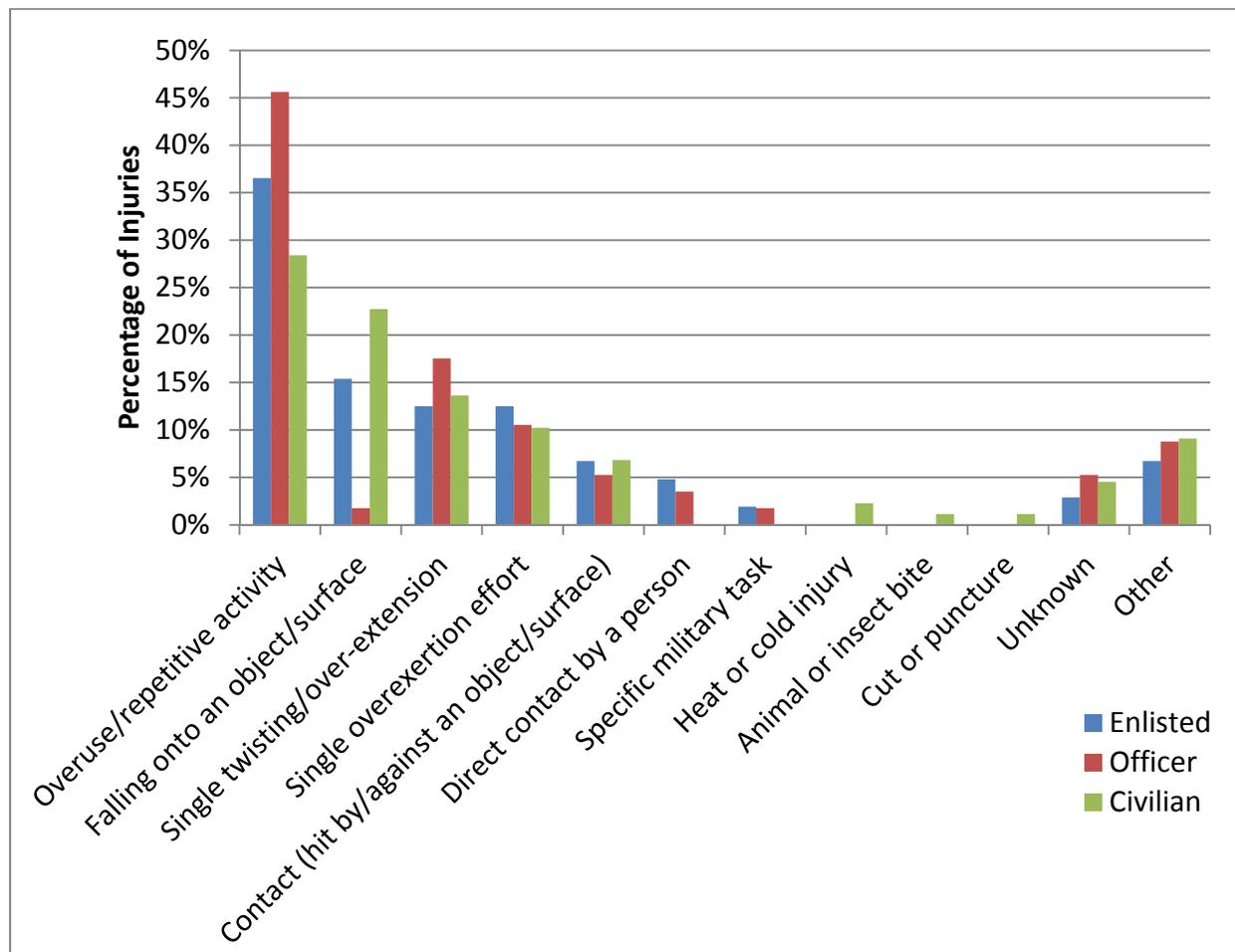
Mechanisms associated with injury are presented by gender and military status in Figures 9 and 10. Overuse was the most common injury mechanism among both genders and all military statuses. Overuse injuries were more common among men (41 percent men, 32 percent women) and military personnel (37 percent enlisted, 46 percent officer, 28 percent Civilian). Falling onto an object/surface was more common among Civilians (23 percent) than among military staff (15 percent enlisted, 2 percent officer).

**Table 11. Injury Mechanisms, n=251 Injuries**

Injury Mechanism	Frequency
Overuse/repetitive activity	91 (36%)
Falling onto an object	37 (15%)
Single twisting/overextension	35 (14%)
Single overexertion effort	29 (12%)
Contact (hit by/against an object/surface)	14 (6%)
Direct contact by a person	9 (4%)
Specific military task	3 (1%)
Heat or cold injury	2 (1%)
Animal or insect bite	1 (0%)
Cut or puncture	1 (0%)
Unknown	10 (4%)
Other	19 (8%)
Total	251 (100%)



**Figure 9. Injury Mechanisms by Gender**



**Figure 10. Injury Mechanisms by Military Status**

#### 6.4.5 Activities Associated with Injuries

Activities associated with reported injuries are summarized in Table 12. Running for physical training was the most common activity associated with injuries (24%), followed by walking or hiking (15%) and lifting or moving heavy objects (11%). “Other” responses included fall/slip, fixing roof, and roller coaster. Lifting injuries included patient care (n=6, 22 percent) and lifting children (n=3, 11 percent). Many sports were specified, such as soccer (n=6, 29 percent), volleyball (n=4, 19 percent), football (n=2, 10 percent), and basketball (n=2, 10 percent).

Figures 11 and 12 show the distribution of injury-related activities by gender and military status. Running was the predominant injury-affiliated activity for men (31 percent) and military personnel (35 percent enlisted, 33 percent officer), while walking/hiking was the leading activity for women (20 percent) and Civilians (31 percent). Of the Civilian “Other” responses (n=11), 54 percent (n=6) were specified as falls, indicating that some respondents considered a fall an activity rather than a mechanism.

Activities associated with injuries specifically among Soldiers are presented in Appendix E.

**Table 12. Injury Activities, n=251 Injuries**

Injury Activity	Frequency
Physical training (running)	61 (24%)
Walking or hiking	38 (15%)
Lifting or moving heavy objects	27 (11%)
Sports or recreation	21 (8%)
Physical training (not running or weightlifting)	20 (8%)
Marching – no load	15 (6%)
Physical training (weightlifting)	13 (5%)
Stepping/climbing	13 (5%)
Riding, driving, or moving in/around a motor vehicle	7 (3%)
Combatives training	5 (2%)
Work-related tasks	5 (2%)
Other training	4 (2%)
Marching – with load	3 (1%)
Repairing or maintaining equipment	2 (1%)
Rough-housing or fighting	2 (1%)
Unknown	7 (3%)
Other	11 (4%)
Total	251 (100%)

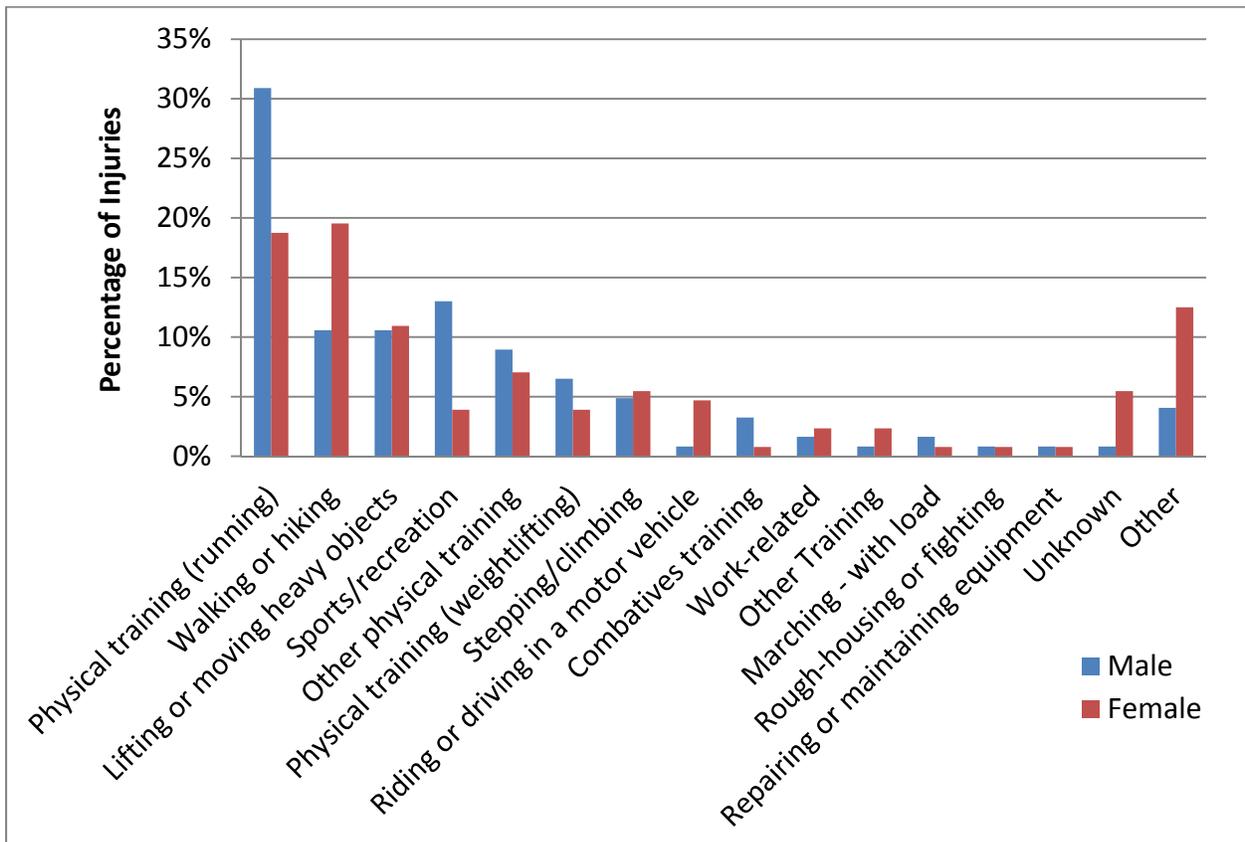
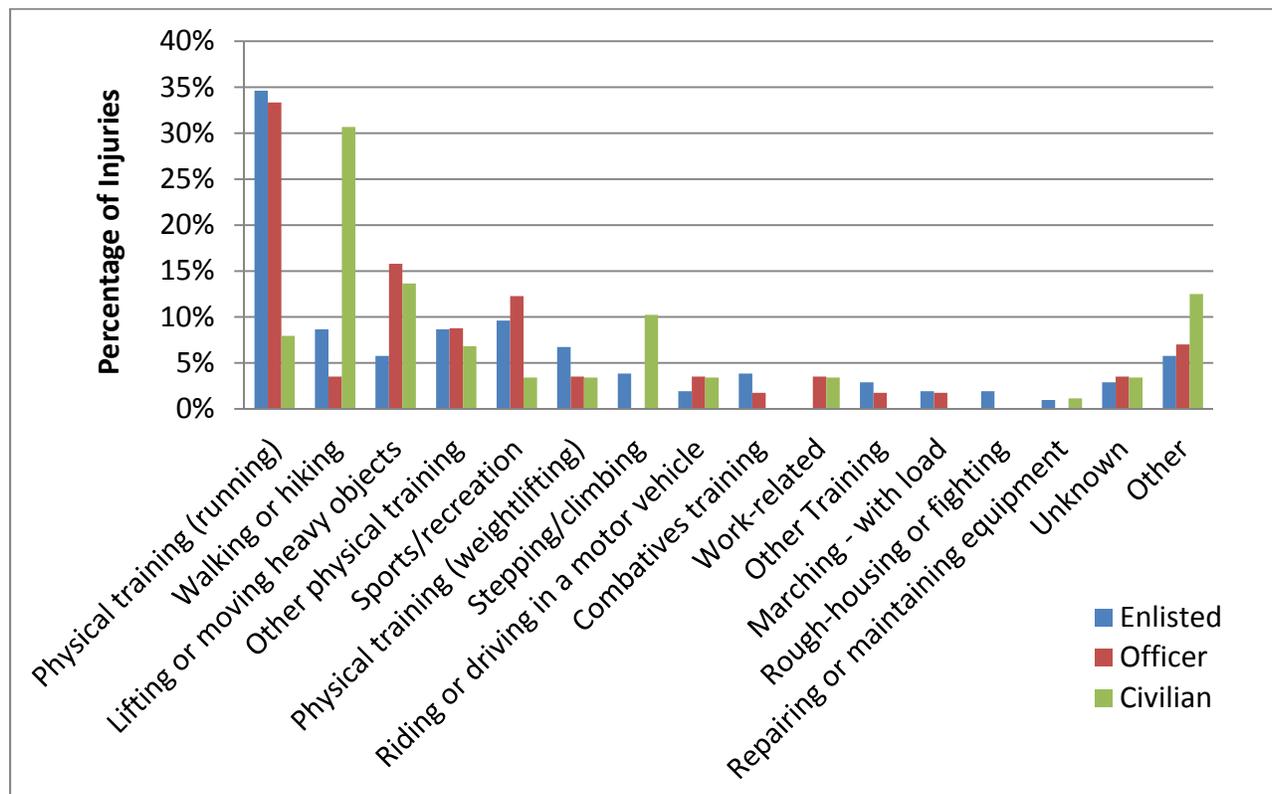
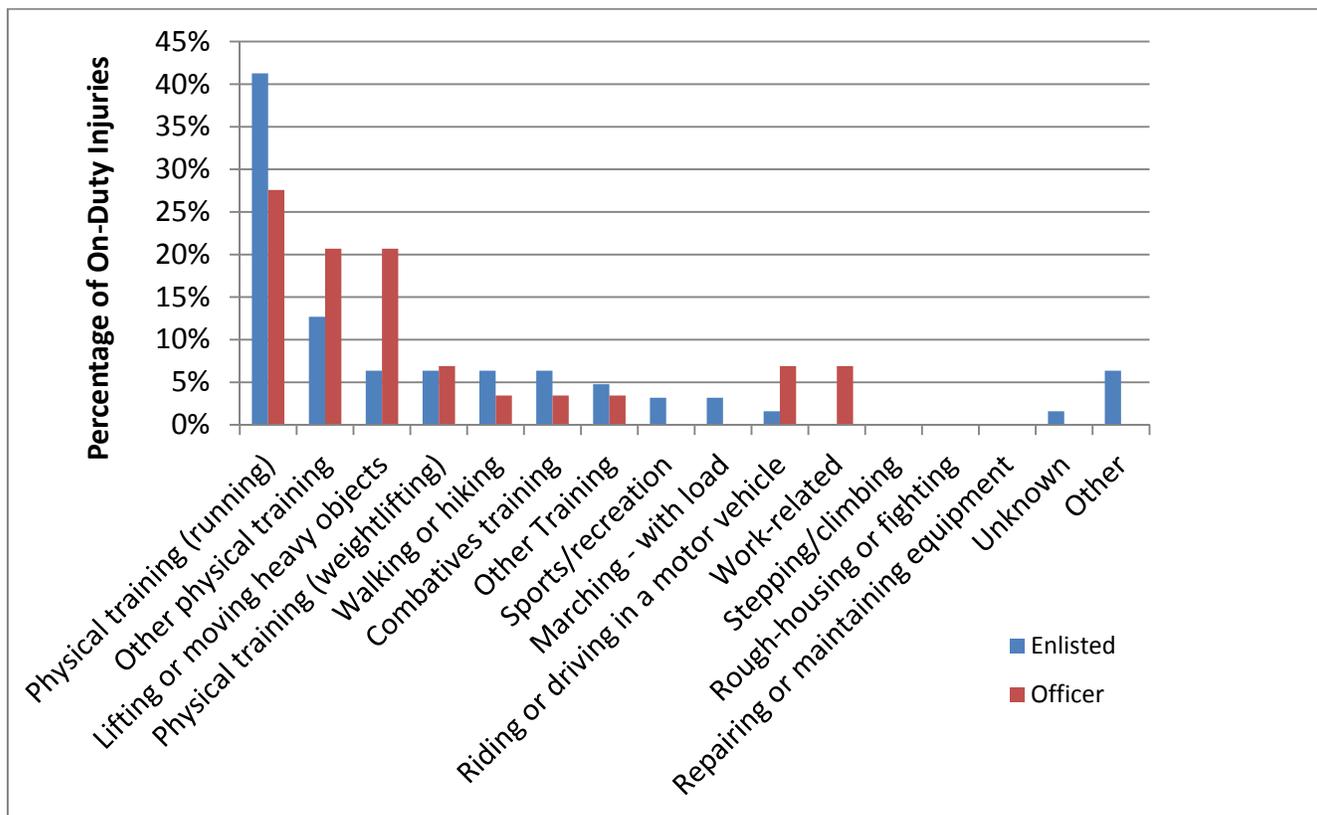


Figure 11. Injury Activities by Gender



**Figure 12. Injury Activities by Military Status**

Fifty-seven percent of the injuries to military personnel (n=92) occurred while on duty. The activities associated with these on-duty injuries are shown in Figure 13. Most of these injuries occurred while running during physical training (37 percent), followed by other physical training (15 percent) and lifting heavy objects (11 percent).



**Figure 13. On-duty Injury Activities by Military Status**

## 6.5 Injury Risk Factors

### 6.5.1 Injury Risk Factors: All Employees

Table 13 shows the incidence of injuries among respondents by demographic group which were as follows :

- Fifty percent of males and 44 percent of females reported at least one injury in the past 12 months;
- Sixty percent of enlisted, 46 percent of officers, 38 percent of DA Civilians were injured;
- Fifty-three percent of those aged 18-25, 45 percent of those aged 26-39, 50 percent of those aged 40-54, and 41 percent of those aged 55+ were injured;
- Fifty-nine percent of Medics, 58 percent of Technicians, 53 percent of Other Medical employees, 50 percent of Pharmacy employees, 47 percent of Administrative personnel, 40 percent of Nurses, 13 percent of Physicians, 58 percent of employees with Other/Unspecified occupations were injured.

Risk ratios suggested that being enlisted, holding an associate’s degree, being a physician, tobacco use, poor sleeping habits, overuse of alcohol and/or drugs, being stressed often in the

recent past, being angered often in the recent past, and being overwhelmed often in the recent past were associated with injury ( $p \leq 0.10$ ).

**Table 13. Injury Risks by Demographic, Health Behavior, and Behavioral Health Factors for GLWACH Employees (n=380)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Age	18-25	34	53%	1.28(0.83-1.98)	0.27
	26-39	145	45%	1.09(0.77-1.53)	0.64
	40-54	138	50%	1.21(0.86-1.70)	0.25
	55+	63	42%	1.00	
Gender	Male	166	50%	1.14(0.90-1.43)	0.28
	Female	214	44%	1.00	
Military status	<i>Enlisted</i>	117	60%	1.58(1.24-2.02)	<0.01
	Officer	88	47%	1.23(0.92-1.65)	0.18
	DA Civilian	169	38%	1.00	
	Other	6	33%	0.87(0.28-2.73)	0.80
Education level	GED or High School	86	48%	1.24(0.88-1.76)	0.23
	<i>Associate's</i>	80	58%	1.49(1.07-2.08)	0.02
	Bachelor's	83	38%	1.00	
	Master's or Doctorate	102	43%	1.12(0.79-1.59)	0.53
	Other Professional Degree	29	52%	1.34(0.86-2.09)	0.22
Occupational group	Nurse	61	39%	1.00	
	<i>Physician</i>	23	13%	0.33(0.11-1.00)	0.02
	<i>Technician</i>	38	58%	1.47(0.97-2.22)	0.07
	Pharmacy	8	50%	1.27(0.59-2.72)	0.57
	<i>Medic</i>	50	58%	1.47(0.29-37.02)	0.05
	Other Medical	77	53%	1.35(0.93-1.97)	0.11
	Admin	53	47%	1.20(0.79-1.83)	0.40
	Other non-medical/Unspecified	70	43%	1.09(0.72-1.65)	0.68
Poor eating habits	Yes	164	48%	1.05(0.85-1.30)	0.65
	No	216	46%	1.00	
Tobacco use	Yes	68	62%	1.42(1.13-1.78)	0.01
	No	312	44%	1.00	
Poor sleeping habits	Yes	186	53%	1.28(1.03-1.59)	0.03
	No	194	41%	1.00	

**Table 13. Injury Risks by Demographic, Health Behavior, and Behavioral Health for GLWACH Employees (n=380) (cont.)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Not enough exercise	Yes	222	45%	0.93(0.75-1.16)	0.53
	No	158	49%	1.00	
Overuse of alcohol/drugs	Yes	9	78%	<i>1.69(1.17-2.43)</i>	0.06
	No	371	46%	1.00	
Other unhealthy behavior	Yes	6	50%	<i>1.07(0.48-2.40)</i>	0.88
	No	374	47%	1.00	
Stressed	Yes	119	58%	<i>1.39(1.13-1.71)</i>	<0.01
	No	261	42%	1.00	
Angered	Yes	82	57%	<i>1.30(1.04-1.64)</i>	0.03
	No	298	44%	1.00	
Overwhelmed	Yes	57	58%	<i>1.29(1.00-1.66)</i>	0.07
	No	323	45%	1.00	

Legend

CI = Confidence Interval

Note:

Significant categories ( $p \leq 0.10$ ) are in italics.

When univariate logistic regression was conducted, the following variables were seen to be potential risk factors for injury ( $p \leq 0.10$ ): military status, occupational group, tobacco use, poor sleeping habits, overuse of alcohol/drugs, being stressed, being angered, and being overwhelmed (Table 14). Furthermore, the Associate's degree education level was observed to be a potential risk factor, though the overall variable was not significant.

**Table 14. Univariate Logistic Regression Results: Potential Injury Risk Factors for GLWACH Employees (n=380)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Age	18-25	34	53%	1.60(0.69-3.71)	0.27	0.56
	26-39	145	45%	1.16(0.64-2.11)	0.64	
	40-54	138	50%	1.42(0.78-2.60)	0.25	
	55+	63	42%	1.00		
Gender	Male	166	50%	1.25(0.83-1.88)	0.28	0.28
	Female	214	44%	1.00		

**Table 14. Univariate Logistic Regression Results: Potential Injury Risk Factors for GLWACH Employees (n=380) cont.**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
<b>Military status</b>	<i>Enlisted</i>	117	60%	<i>2.38(1.47-3.86)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	Officer	88	47%	1.40(0.83-2.35)	0.21	
	DA Civilian	169	38%	1.00		
	Other	6	33%	0.80(0.14-4.49)	0.80	
Education level	GED or High School	86	48%	1.45(0.79-2.68)	0.23	0.15
	<i>Associate's</i>	80	58%	<i>2.16(1.15-4.03)</i>	<i>0.02</i>	
	Bachelor's	83	38%	1.00		
	Master's or Doctorate	102	43%	1.21(0.67-2.18)	0.53	
	Other Professional Degree	29	52%	1.71(0.73-4.00)	0.22	
<b>Occupational group</b>	Nurse	61	39%	1.00		<b>0.03</b>
	<i>Physician</i>	23	13%	<i>0.23(0.06-0.86)</i>	<i>0.03</i>	
	Technician	38	58%	2.12(0.93-4.83)	0.07	
	Pharmacy	8	50%	1.54(0.35-6.76)	0.57	
	<i>Medic</i>	50	58%	<i>2.13(1.00-4.56)</i>	<i>0.05</i>	
	Other Medical	77	53%	1.76(0.89-3.47)	0.11	
	Admin	53	47%	1.38(0.65-2.90)	0.40	
	Other non-medical/Unspecified	70	43%	1.16(0.58-2.33)	0.68	
Poor eating habits	Yes	164	48%	1.10(0.73-1.65)	0.65	0.65
	No	216	46%	1.00		
<b>Tobacco use</b>	Yes	68	62%	<i>2.09(1.22-3.58)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	312	44%	1.00		
<b>Poor sleeping habits</b>	Yes	186	53%	<i>1.59(1.06-2.38)</i>	<i>0.03</i>	<b>0.03</b>
	No	194	41%	1.00		
Not enough exercise	Yes	222	45%	0.88(0.58-1.32)	0.53	0.53
	No	158	49%	1.00		
<b>Overuse of alcohol/drugs</b>	Yes	9	78%	<i>4.09(0.84-19.97)</i>	<i>0.08</i>	<b>0.08</b>
	No	371	46%	1.00		
Other unhealthy behavior	Yes	6	50%	1.14(0.23-5.71)	0.88	0.88
	No	374	47%	1.00		
<b>Stressed</b>	Yes	119	58%	<i>1.92(1.24-2.99)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	261	42%	1.00		
<b>Angered</b>	Yes	82	57%	<i>1.71(1.05-2.81)</i>	<i>0.03</i>	<b>0.03</b>
	No	298	44%	1.00		
<b>Overwhelmed</b>	Yes	57	58%	<i>1.69(0.96-2.98)</i>	<i>0.07</i>	<b>0.07</b>
	No	323	45%	1.00		

Legend: CI = Confidence Interval

Note: Significant categories ( $p \leq 0.10$ ) are in bold. Significant categories ( $p \leq 0.10$ ) are in italics.

Potential risk factors for injury identified by univariate analysis entered into a backward stepping multivariable logistic regression. Education level was included because the final model produced a better Cox & Snell R-squared value (R-squared=0.131) than the resulting model when it was excluded (R-squared=0.112).

Multivariable logistic regression results indicated that military status, occupation, overuse of alcohol/drugs, and stress were statistically significant risk factors for injury among GLWACH employee survey respondents ( $p \leq 0.05$ ) (Table 15). Active Duty Military members (enlisted and officers) had a nearly three times greater odds of injury compared to Army Civilian employees ( $p \leq 0.01$ ). Physicians had a significantly lower odds of injury ( $p \leq 0.01$ ). Those respondents who reported overusing alcohol and/or drugs had a nearly six times greater odds of injury, and those who reported feeling stressed often or very often in the past month had twice the odds of injury compared to those who did not report these behaviors ( $p = 0.04$  and  $p \leq 0.01$ , respectively). Education level, specifically holding an Associate's degree as the highest level of education, remained in the model at the  $p \leq 0.10$  level, but was not a statistically significant risk factor.

DRAFT

**Table 15. Multivariable Logistic Regression Results: Independent Injury Risk Factors for GLWACH Employees (n=380)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
<b>Military status</b>	<i>Enlisted</i>	117	60%	<i>2.75(1.32-5.71)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	<i>Officer</i>	88	47%	<i>2.98(1.44-6.17)</i>	<i>&lt;0.01</i>	
	DA Civilian	169	38%	1.00		
	Other	6	50%	1.11(0.18-6.72)	0.91	
<b>Occupational group</b>	Nurse	61	39%	1.00		<b>0.03</b>
	<i>Physician</i>	23	13%	<i>0.11(0.03-0.46)</i>	<i>&lt;0.01</i>	
	Technician	38	58%	2.08(0.79-5.50)	0.14	
	Pharmacy	8	50%	1.00(0.18-5.57)	>0.99	
	Medic	50	58%	1.43(0.51-4.00)	0.50	
	Other Medical	77	53%	1.35(0.59-3.10)	0.48	
	Admin	53	47%	1.79(0.77-4.18)	0.18	
	Other non-medical/Unspecified	70	43%	1.57(0.69-3.54)	0.28	
<b>Overuse of alcohol/drugs</b>	Yes	9	78%	<i>5.93(1.06-33.19)</i>	<i>0.04</i>	<b>0.04</b>
	No	371	46%	1.00		
<b>Stressed</b>	Yes	119	58%	<i>2.10(1.30-3.40)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	261	42%	1.00		
Education level	GED or High School	86	48%	1.32(0.65-2.64)	0.44	0.10
	<i>Associate's</i>	80	58%	<i>2.32(1.16-4.65)</i>	<i>0.02</i>	
	Bachelor's	83	38%	1.00		
	Master's or Doctorate	102	43%	1.87(0.93-3.76)	0.08	
	Other Professional Degree	29	52%	2.27(0.87-5.90)	0.09	

Legend: CI = Confidence Interval

Notes: Significant variables (p≤0.05) are in bold. Significant categories (p≤0.05) are in italics.

Variables entered into backward stepping regression model: Military status, Occupational group, Tobacco use, Poor sleeping habits, Overuse of alcohol/drugs, Stressed, Angered, Overwhelmed.

### 6.5.2 Injury Risk Factors: Active Duty Military Employees

Comparisons of injury risks by demographic group for Active Duty military members are shown in Table 16. Being over 40 years of age, enlisted, holding an Associate's or professional degree, using tobacco, being stressed recently, being angered, and being overwhelmed were associated with higher injury risk. Physicians were observed to be at a lower risk of injury compared to nurses.

**Table 16. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Active Duty Military GLWACH Employees (n=205)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Age	18-25	32	53%	1.14(0.77-1.66)	0.53
	26-39	109	47%	1.00	
	40+	64	67%	1.44(1.10-1.87)	<0.01
Gender	Male	134	54%	0.98(0.75-1.27)	0.87
	Female	71	55%	1.00	
Military status	<i>Enlisted</i>	117	60%	1.31(1.00-1.72)	0.04
	Officer	88	47%	1.00	
Education level	GED or High School	49	59%	1.33(0.93-1.90)	0.13
	<i>Associate's</i>	39	64%	1.44(1.00-2.06)	0.06
	Bachelor's	42	48%	1.07(0.70-1.62)	0.76
	Master's or Doctorate	65	45%	1.00	
	<i>Other Professional Degree</i>	10	80%	1.79(1.19-2.71)	0.04
Occupational group	Nurse	31	52%	1.00	
	<i>Physician</i>	22	14%	0.23(0.07-0.71)	<0.01
	Technician	18	67%	1.29(0.81-2.07)	0.31
	Pharmacy	3	100%	n/a	n/a
	Medic	47	62%	1.20(0.79-1.80)	0.38
	Other Medical	62	55%	1.06(0.71-1.60)	0.77
	Admin	14	57%	1.11(0.63-1.95)	0.73
	Other non-medical/Unspecified	8	75%	1.45(0.86-2.46)	0.24
Poor eating habits	Yes	83	57%	1.08(0.84-1.39)	0.56
	No	122	52%	1.00	
Tobacco use	Yes	46	74%	1.53(1.21-1.93)	<0.01
	No	159	48%	1.00	

**Table 16. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Active Duty Military GLWACH Employees (n=205) (cont.)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Poor sleeping habits	Yes	115	59%	1.24(0.95-1.61)	0.11
	No	90	48%	1.00	
Not enough exercise	Yes	93	51%	0.88(0.68-1.14)	0.35
	No	112	57%	1.00	
Overuse of alcohol/drugs	Yes	4	75%	1.40(0.78-2.49)	0.40
	No	201	54%	1.00	
Other unhealthy behavior	Yes	3	100%	n/a	n/a
	No	202	53%	1.00	
Stressed	Yes	63	70%	1.48(1.17-1.88)	<0.01
	No	142	47%	1.00	
Angered	Yes	43	74%	1.53(1.21-1.93)	<0.01
	No	162	49%	1.00	
Overwhelmed	Yes	28	75%	1.48(1.14-1.91)	0.02
	No	177	51%	1.00	

Legend

CI = Confidence Interval

Note:

Significant categories ( $p \leq 0.10$ ) are in italics.

Based on the results of univariate logistic regression (Table 17), the following variables were included in the multivariable analysis: age, military status, occupational group, tobacco use, being stressed, being angered, and being overwhelmed. When education level was entered into the backward-stepping model, the variable was not significant and was removed.

When the occurrence of at least one injury in the past 12 months was regressed on these variables in a multivariable backward stepping logistic regression (Table 18), age, occupation, tobacco use, and stress were revealed to be statistically significant injury risk factors ( $p \leq 0.05$ ). Those active duty respondents 40 years of age and older had a four times greater odds of injury ( $p \leq 0.01$ ). As was the case for all employees, military respondents who are physicians had a significantly lower odds of injury compared to nurses. Tobacco use and stress were each found to result in approximately 2.5 times greater odds of injury.

**Table 17. Univariate Logistic Regression Analysis: Potential Injury Risk Factors for Active Duty Military GLWACH Employees (n=205)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
<b>Age</b>	18-25	32	53%	1.29(0.59-2.84)	0.53	<b>0.04</b>
	26-39	109	47%	1.00		
	40+	64	67%	2.33(1.22-4.43)	0.01	
<b>Gender</b>	Male	134	54%	1.00		0.87
	Female	71	55%	1.05(0.59-1.87)	0.87	
<b>Military status</b>	<i>Enlisted</i>	117	60%	1.71(0.98-2.99)	0.06	<b>0.06</b>
	Officer	88	47%	1.00		
<b>Education level</b>	GED or High School	49	59%	1.80(0.85-3.81)	0.13	0.11
	<i>Associate's</i>	39	64%	2.22(0.98-5.02)	0.06	
	Bachelor's	42	48%	1.13(0.52-2.46)	0.76	
	Master's or Doctorate	65	45%	1.00		
	<i>Other Professional Degree</i>	10	80%	4.97(0.98-25.21)	0.05	
<b>Occupational group</b>	Nurse	31	52%	1.00		<b>0.05</b>
	<i>Physician</i>	22	14%	0.15(0.04-0.60)	<0.01	
	Technician	18	67%	1.88(0.56-6.27)	0.31	
	Pharmacy	3	100%	n/a	>0.99	
	Medic	47	62%	1.51(0.60-3.78)	0.38	
	Other Medical	62	55%	1.14(0.48-2.70)	0.77	
	Admin	14	57%	1.25(0.35-4.46)	0.73	
	Other non-medical/Unspecified	8	75%	2.81(0.49-16.16)	0.25	
<b>Poor eating habits</b>	Yes	83	57%	1.18(0.68-2.07)	0.56	0.56
	No	122	52%	1.00		
<b>Tobacco use</b>	Yes	46	74%	3.02(1.46-6.25)	<0.01	<b>0.01</b>
	No	159	48%	1.00		
<b>Poor sleeping habits</b>	Yes	115	59%	1.58(0.91-2.76)	0.11	0.11
	No	90	48%	1.00		
<b>Not enough exercise</b>	Yes	93	51%	0.77(0.44-1.33)	0.35	0.35
	No	112	57%	1.00		
<b>Overuse of alcohol/drugs</b>	Yes	4	75%	2.58(0.26-25.26)	0.42	0.42
	No	201	54%	1.00		

**Table 17. Univariate Logistic Regression Analysis: Potential Injury Risk Factors for Active Duty Military GLWACH Employees (n=205) (cont.)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value	
Other unhealthy behavior	Yes	3	100%	n/a	>0.99	0.99
	No	202	53%	1.00		
<b>Stressed</b>	Yes	63	70%	<i>2.59(1.38-4.87)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	142	47%	1.00		
<b>Angered</b>	Yes	43	74%	<i>3.06(1.44-6.48)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	162	49%	1.00		
<b>Overwhelmed</b>	Yes	28	75%	<i>2.90(1.17-7.17)</i>	<i>0.02</i>	<b>0.02</b>
	No	177	51%	1.00		

Legend: CI = Confidence Interval

Note: Significant categories ( $p \leq 0.10$ ) are in bold. Significant categories ( $p \leq 0.10$ ) are in italics.

**Table 18. Multivariable Logistic Regression Results: Independent Injury Risk Factors for Active Duty Military GLWACH Employees (n=205)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
<b>Age</b>	18-25	32	53%	0.94(0.40-2.20)	0.88	<b>&lt;0.01</b>
	26-39	109	47%	1.00		
	40+	64	67%	<i>3.48(1.54-7.88)</i>	<i>&lt;0.01</i>	
<b>Occupational group</b>	Nurse	31	52%	1.00		<b>0.05</b>
	<i>Physician</i>	22	14%	<i>0.21(0.05-0.92)</i>	<i>0.04</i>	
	Technician	18	67%	2.99(0.76-11.82)	0.12	
	Pharmacy	3	100%	n/a	>0.99	
	Medic	47	62%	2.58(0.87-7.63)	0.09	
	Other Medical	62	55%	2.04(0.74-5.60)	0.17	
	Admin	14	57%	2.32(0.56-9.66)	0.25	
	Other non-medical/Unspecified	8	75%	3.27(0.53-20.35)	0.20	
<b>Tobacco use</b>	Yes	46	74%	<i>2.49(1.11-5.59)</i>	<i>0.03</i>	<b>0.03</b>
	No	159	48%	1.00		
<b>Stressed</b>	Yes	63	70%	<i>2.49(1.23-5.04)</i>	<i>0.01</i>	<b>0.01</b>
	No	142	47%	1.00		

Legend: CI = Confidence Interval

Notes: Significant variables ( $p \leq 0.05$ ) are in bold. Significant categories ( $p \leq 0.05$ ) are in italics. Variables entered into the backward stepping logistic regression model: Age, Military status, Education level, Occupational group, Tobacco use, Stressed, Angered, Overwhelmed.

### 6.5.3 Injury Risk Factors: Civilian Employees

When the categorical risk factors were compared for Civilian employees, only overuse of alcohol or drugs, being a Technician or an “Other Medical” professional, and holding an Associate’s degree were associated with significantly higher injury risk ( $p \leq 0.10$ ), as shown in Table 19. The results of univariate logistic regression identified overuse of alcohol or drugs as the only statistically significant potential risk factor ( $p \leq 0.10$ ) among Civilians (Table 20). Education level and occupational group were not significant variables, but the Associate’s degree, Technician, and Other Medical categories were significant.

A multivariable logistic regression model that included education level, occupational group, and overuse of alcohol or drugs indicated that overuse of alcohol/drugs remained in the model at the  $p \leq 0.10$  level ( $p = 0.09$ ), as shown in Table 21. At the  $p \leq 0.05$  level, there were no significant risk factors for injury (as measured by the survey) for the Civilian employee population at GLWACH.

**Table 19. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Civilian GLWACH Employees (n=169)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Age	18-39	35	37%	1.05(0.62-1.77)	0.87
	40-54	76	36%	1.00	
	55+	58	43%	1.21(0.79-1.85)	0.37
Gender	Male	28	39%	1.03(0.62-1.70)	0.92
	Female	141	38%	1.00	
Education level	GED or High School	37	32%	1.05(0.54-2.04)	0.88
	Associate’s	41	51%	1.67(0.95-2.91)	0.06
	Bachelor’s	39	31%	1.00	
	Master’s or Doctorate	33	39%	1.28(0.68-2.41)	0.45
	Other Professional Degree	19	37%	1.20(0.56-2.54)	0.65
Occupational group	Nurse	30	27%	1.00	
	Physician	1	0%	n/a	n/a
	Technician	19	52%	1.97(0.95-4.10)	0.07
	Pharmacy	5	20%	0.75(0.12-4.77)	0.76
	Medic	3	0%	n/a	n/a
	Other Medical	13	54%	2.02(0.93-4.40)	0.09
	Admin	39	44%	1.64(0.82-3.27)	0.15
	Other non-medical/Unspecified	59	37%	1.40(0.71-2.76)	0.32

**Table 19. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Civilian GLWACH Employees (n=169) (cont.)**

Variable Category		Total n	n(%) Injured	Risk Ratio (95% CI)	p-value
Poor eating habits	Yes	79	39%	1.04(0.71-1.52)	0.85
	No	90	38%	1.00	
Tobacco use	Yes	22	36%	0.94(0.52-1.69)	0.83
	No	147	38%	1.00	
Poor sleeping habits	Yes	67	43%	1.23(0.84-1.79)	0.30
	No	102	35%	1.00	
Not enough exercise	Yes	124	42%	1.45(0.88-2.40)	0.12
	No	45	29%	1.00	
Overuse of alcohol/drugs	Yes	5	80%	<i>2.15(1.33-3.48)</i>	<i>0.05</i>
	No	164	37%	1.00	
Other unhealthy behavior	Yes	3	0%	n/a	n/a
	No	166	39%	1.00	
Stressed	Yes	56	45%	1.26(0.86-1.85)	0.25
	No	113	35%	1.00	
Angered	Yes	39	38%	1.00(0.64-1.57)	>0.99
	No	130	38%	1.00	
Overwhelmed	Yes	29	41%	1.09(0.67-1.77)	0.72
	No	140	38%	1.00	

Legend  
CI = Confidence Interval

Note:  
Significant categories ( $p \leq 0.10$ ) are in italics.

**Table 20. Univariate Logistic Regression Results: Potential Injury Risk Factors for Civilian GLWACH Employees (n=169)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Age	18-39	35	37%	1.07(0.47-2.46)	0.87	0.66
	40-54	76	36%	1.00		
	55+	58	43%	1.38(0.68-2.77)		
Gender	Male	28	39%	1.04(0.45-2.39)	0.92	0.92
	Female	141	38%	1.00		

**Table 20. Univariate Logistic Regression Results: Potential Injury Risk Factors for Civilian GLWACH Employees (n=169) (cont.)**

Variable Category		Total n	n(%) Injured	Odds Ratio (95% CI)	p-value	
Education level	GED or High School	37	32%	1.08(0.41-2.84)	0.88	0.37
	<i>Associate's</i>	41	51%	<i>2.36(0.95-5.90)</i>	<i>0.07</i>	
	Bachelor's	39	31%	1.00		
	Master's or Doctorate	33	39%	1.46(0.55-3.88)	0.45	
	Other Professional Degree	19	37%	1.31(0.41-4.16)	0.64	
Occupational group	Nurse	30	27%	1.00		0.59
	Physician	1	0%	n/a	>0.99	
	<i>Technician</i>	19	52%	<i>3.06(0.91-10.25)</i>	<i>0.07</i>	
	Pharmacy	5	20%	0.69(0.07-7.11)	0.75	
	Medic	3	0%	n/a	>0.99	
	<i>Other Medical</i>	13	54%	<i>3.21(0.83-12.47)</i>	<i>0.09</i>	
	Admin	39	44%	2.13(0.76-5.94)	0.15	
Other non-medical/Unspecified	59	37%	1.64(0.62-4.30)	0.32		
Poor eating habits	Yes	79	39%	1.06(0.57-1.98)	0.85	0.85
	No	90	38%	1.00		
Tobacco use	Yes	22	36%	0.90(0.36-2.29)	0.83	0.83
	No	147	38%	1.00		
Poor sleeping habits	Yes	67	43%	1.40(0.74-2.63)	0.30	0.30
	No	102	35%	1.00		
Not enough exercise	Yes	124	42%	1.78(0.85-3.71)	0.13	0.13
	No	45	29%	1.00		
<b>Overuse of alcohol/drugs</b>	Yes	5	80%	<i>6.75(0.74-61.82)</i>	<i>0.09</i>	<b>0.09</b>
	No	164	37%	1.00		
Other unhealthy behavior	Yes	3	0%	0	>0.99	>0.99
	No	166	39%	1.00		
Stressed	Yes	56	45%	1.47(0.77-2.83)	0.25	0.25
	No	113	35%	1.00		
Angered	Yes	39	38%	1.00(0.48-2.09)	>0.99	>0.99
	No	130	38%	1.00		
Overwhelmed	Yes	29	41%	1.16(0.52-2.62)	0.72	0.72
	No	140	38%	1.00		

Legend  
CI = Confidence Interval

Note:  
Significant categories (p≤0.10) are in bold. Significant categories (p≤0.10) are in italics.

**Table 21. Multivariable Logistic Regression Results: Independent Injury Risk Factors for Civilian GLWACH Employees (n=169)**

Variable category		Total n	n(%) injured	Odds Ratio (95% CI)	p-value
Overuse of alcohol/drugs	Yes	5	80%	6.75(0.74-61.82)	.09
	No	164	37%	1.00	

Legend  
CI = Confidence Interval

Note:  
Variables entered into the backward stepping logistic regression model: Education level, Occupational group, Overuse of alcohol/drugs

#### 6.5.4 Injury Risk Factors: Male Employees

Table 22 provides comparisons for all injury risk factors among male respondents only. Higher injury risk was associated with being age 40 to 54, having a GED or Professional degree, tobacco use, poor sleeping habits, being stressed, and being angered ( $p \leq 0.10$ ). Physicians had an 85 percent lower injury risk compared to nurses. Univariate logistic regression analysis showed the same results (Table 23), although age, occupation, and education level were not seen to be significant variables.

Multivariable logistic regression produced a higher R-squared value when age, occupation, and education level were included (R-squared = 0.239), compared to the results when only one or two were included (R-squared = 0.069 in all cases) or when none of them were included (R-squared = 0.069). When age, occupation, education level, tobacco use, poor sleeping habits, stress and anger were regressed against injury occurrence (Table 24), respondents having a GED/High School degree were observed to have odds of injury that were three times higher than having a Bachelor's degree, those with a Master's or Doctorate degree had a four times greater odds of injury, and those who reported poor sleeping habits had an odds of injury that was more than twice as high than those not reporting poor sleeping habits ( $p \leq 0.05$ ). Being a physician was protective; male physicians had a 98 percent lower odds of injury compared to male nurses. Age and tobacco use remained in the model and the  $p \leq 0.10$  level, but were not significant risk factors for injury.

**Table 22. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Male GLWACH Employees (n=166)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Age	18-25	23	48%	1.35(0.63-2.93)	0.43
	26-39	74	45%	1.26(0.63-2.52)	0.49
	40-54	52	63%	1.80(0.91-3.53)	0.04
	55+	17	35%	1.00	
Military status	Enlisted	85	56%	1.44(0.87-2.36)	0.12
	Officer	49	49%	1.25(0.73-2.14)	0.41
	DA Civilian	28	39%	1.00	
	Other	4	0%	0	n/a
Education level	<i>GED or High School</i>	46	61%	1.69(1.03-2.76)	0.03
	Associate's	32	47%	1.30(0.73-2.30)	0.37
	Bachelor's	36	36%	1.00	
	Master's or Doctorate	45	49%	1.35(0.80-2.29)	0.25
	<i>Other Professional Degree</i>	7	71%	1.98(1.04-3.75)	0.09
Occupational group	Nurse	18	50%	1.00	
	<i>Physician</i>	13	8%	0.15(0.02-1.07)	0.01
	Technician	21	62%	1.24(0.70-2.19)	0.46
	Pharmacy	0	0%	n/a	n/a
	Medic	39	59%	1.18(0.69-2.01)	0.53
	Other Medical	43	51%	1.02(0.59-1.77)	0.93
	Admin	13	62%	1.23(0.65-2.31)	0.53
	Other/Unspecified	19	37%	0.74(0.35-1.56)	0.43
Poor eating habits	Yes	65	49%	0.98(0.71-1.33)	0.87
	No	101	50%	1.00	
Tobacco use	Yes	42	69%	1.59(1.19-2.11)	<0.01
	No	124	44%	1.00	
Poor sleeping habits	Yes	85	56%	1.31(0.96-1.79)	0.09
	No	81	43%	1.00	
Not enough exercise	Yes	71	46%	0.88(0.65-1.21)	0.43
	No	95	53%	1.00	
Overuse of alcohol/drugs	Yes	7	71%	1.46(0.89-2.39)	0.25
	No	159	49%	1.00	
Other unhealthy behavior	Yes	5	60%	1.21(0.58-2.51)	0.65
	No	161	50%	1.00	
Stressed	Yes	37	62%	1.34(0.98-1.83)	0.09
	No	129	47%	1.00	
Angered	Yes	32	65%	1.42(1.04-1.93)	0.05
	No	134	46%	1.00	

**Table 22. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Male GLWACH Employees (n=166) (cont.)**

Variable Category		Total n	% Injured	Risk Ratio (95% CI)	p-value
Overwhelmed	Yes	18	67%	1.39(0.96-2.01)	0.14
	No	148	48%	1.00	

Legend  
CI = Confidence Interval

Note:  
Significant categories (p≤0.10) are in italics.

**Table 23. Univariate Logistic Regression Results: Potential Injury Risk Factors for Male GLWACH Employees (n=166)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Age	18-25	23	48%	1.68(0.46-6.09)	0.43	0.11
	26-39	74	45%	1.48(0.49-4.41)	0.49	
	<i>40-54</i>	52	63%	<i>3.18(1.02-9.99)</i>	<i>0.05</i>	
	55+	17	35%	1.00		
Military status	Enlisted	85	56%	2.01(0.84-4.79)	0.12	0.46
	Officer	49	49%	1.48(0.58-3.81)	0.41	
	DA Civilian	28	39%	1.00		
	Other	4	0%	n/a	>0.99	
Education level	<i>GED or High School</i>	46	61%	<i>2.75(1.12-6.78)</i>	<i>0.03</i>	0.19
	Associate's	32	47%	1.56(0.59-4.13)	0.37	
	Bachelor's	36	36%	1.00		
	Master's or Doctorate	45	49%	1.69(0.69-4.15)	0.25	
	<i>Other Professional Degree</i>	7	71%	<i>4.42(0.75-26.10)</i>	<i>0.10</i>	
Occupational group	Nurse	18	50%	1.00		0.13
	<i>Physician</i>	13	8%	<i>0.08(0.01-0.78)</i>	<i>0.03</i>	
	Technician	21	62%	1.63(0.45-5.82)	0.46	
	Pharmacy	0	0	n/a	n/a	
	Medic	39	59%	1.44(0.47-4.42)	0.53	
	Other Medical	43	51%	1.05(0.35-3.15)	0.93	
	Admin	13	62%	1.60(0.38-6.82)	0.53	
	Other/Unspecified	19	37%	0.58(0.16-2.17)	0.42	

**Table 23. Univariate Logistic Regression Results: Potential Injury Risk Factors for Male GLWACH Employees (n=166) (cont.)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Poor eating habits	Yes	65	49%	0.95(0.51-1.77)	0.87	0.87
	No	101	50%	1.00		
<b>Tobacco use</b>	Yes	42	69%	<i>2.89(1.37-6.09)</i>	<i>&lt;0.01</i>	<b>&lt;0.01</b>
	No	124	44%	1.00		
<b>Poor sleeping habits</b>	Yes	85	56%	<i>1.71(0.92-3.15)</i>	<i>0.09</i>	<b>0.09</b>
	No	81	43%	1.00		
Not enough exercise	Yes	71	46%	0.78(0.42-1.45)	0.43	0.43
	No	95	53%	1.00		
Overuse of alcohol/drugs	Yes	7	71%	2.60(0.49-13.78)	0.26	0.26
	No	159	49%	1.00		
Other unhealthy behavior	Yes	5	60%	1.52(0.25-9.33)	0.65	0.65
	No	161	50%	1.00		
<b>Stressed</b>	Yes	37	62%	<i>1.89(0.89-4.00)</i>	<i>0.10</i>	<b>0.10</b>
	No	129	47%	1.00		
<b>Angered</b>	Yes	32	65%	<i>2.22(0.99-4.96)</i>	<i>0.05</i>	<b>0.05</b>
	No	134	46%	1.00		
Overwhelmed	Yes	18	67%	2.17(0.77-6.09)	0.14	0.14
	No	148	48%	1.00		

Legend  
CI = Confidence Interval

Note:  
Significant categories (p≤0.10) are in bold. Significant categories (p≤0.10) are in italics.

**Table 24. Multivariable Logistic Regression Results: Independent Injury Risk Factors for Male GLWACH Employees (n=166)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	p-value	
<b>Education level</b>	<i>GED or High School</i>	46	61%	3.19(1.01-10.05)	0.05	<b>0.05</b>
	Associate's	32	47%	1.49(0.49-4.56)	0.49	
	Bachelor's	36	36%	1.00		
	<i>Master's or Doctorate</i>	45	49%	4.14(1.36-12.61)	0.01	
	<i>Other Professional Degree</i>	7	71%	23.57(1.71-325.46)	0.02	
<b>Occupational group</b>	Nurse	18	50%	1.00		<b>0.03</b>
	<i>Physician</i>	13	8%	0.02(0.00-0.34)	<0.01	
	Technician	21	62%	1.80(0.38-8.46)	0.45	
	Pharmacy	0	0	n/a	n/a	
	Medic	39	59%	1.55(0.38-6.31)	0.54	
	Other Medical	43	51%	0.84(0.23-3.03)	0.79	
	Admin	13	62%	2.06(0.39-10.88)	0.40	
Other/Unspecified	19	37%	0.40(0.08-1.95)	0.26		
<b>Poor sleeping habits</b>	Yes	85	56%	2.16(1.01-4.64)	0.05	<b>0.05</b>
	No	81	43%	1.00		
Age	18-25	23	48%	0.60(0.13-2.90)	0.53	0.07
	26-39	74	45%	1.20(0.32-4.47)	0.79	
	40-54	52	63%	3.01(0.82-11.10)	0.10	
	55+	17	35%	1.00		
Tobacco use	Yes	42	69%	2.36(0.93-6.00)	0.07	0.07
	No	124	44%	1.00		

Legend  
CI = Confidence Interval

Notes:  
Significant variables ( $p \leq 0.05$ ) are in bold. Significant categories ( $p \leq 0.05$ ) are in italics.  
Variables entered into the backward stepping logistic regression model: Age, Education level, Occupational group, Tobacco use, Poor sleeping habits, Stressed, and Angered.

### 6.5.5 Injury Risk Factors: Female Employees

Results of comparing of injury risk factors among female employees are given in Table 25. Military status, education level, occupational group, and stress were identified as having categories with significantly higher injury incidence ( $p \leq 0.10$ ). Univariate regression analysis (Table 26) also identified these variables as potential risk factors ( $p \leq 0.10$ ), although occupation was not a

significant variable. Table 27 shows the multivariable regression results. The R-squared goodness of fit was the same regardless of whether occupation was included (R-squared =0.131). Those female respondents who were frequently stressed in the past month had an odds of injury that was twice as high as those who didn't report stress and those holding an Associate's degree were at a four times higher odds of injury ( $p \leq 0.05$ ). Military status remained in the model at the  $p \leq 0.10$  level (female enlisted military had a higher proportion of injuries than civilians), but was not a statistically significant risk factor.

**Table 25. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Female GLWACH Employees (n=214)**

Variable Category		Total n	n(%) Injured	Risk Ratio (95% CI)	p-value
Age	18-25	11	64%	1.52(0.91-2.54)	0.17
	26-39	71	45%	1.08(0.75-1.54)	0.69
	40-54	86	42%	1.00	
	55+	46	43%	1.04(0.69-1.57)	0.86
Military status	<i>Enlisted</i>	32	69%	1.80(1.31-2.46)	<0.01
	Officer	39	44%	1.14(0.75-1.72)	0.55
	DA Civilian	141	38%	1.00	
	<i>Other</i>	2	100%	n/a	n/a
Education level	GED or High School	40	33%	1.00	
	<i>Associate's</i>	48	65%	1.99(1.21-3.25)	<0.01
	Bachelor's	47	40%	1.24(0.71-2.19)	0.45
	Master's or Doctorate	57	39%	1.19(0.68-2.07)	0.54
	Other Professional Degree	22	45%	1.40(0.74-2.65)	0.32
Occupational group	Nurse	43	35%	1.00	
	Physician	10	20%	0.57(0.16-2.11)	0.37
	Technician	17	53%	1.52(0.83-2.78)	0.20
	Pharmacy	8	50%	1.43(0.64-3.20)	0.42
	Medic	11	55%	1.56(0.79-3.08)	0.24
	<i>Other Medical</i>	34	56%	1.60(0.97-2.66)	0.07
	Admin	40	43%	1.22(0.71-2.10)	0.48
	Other/Unspecified	51	45%	1.29(0.78-2.15)	0.32
Poor eating habits	Yes	99	47%	1.14(0.84-1.53)	0.40
	No	115	42%	1.00	
Tobacco use	Yes	26	50%	1.25(0.61-2.57)	0.54
	No	188	44%	1.00	
Poor sleeping habits	Yes	101	50%	1.24(0.92-1.68)	0.16
	No	113	40%	1.00	

**Table 25. Injury Risks by Demographic, Health Behavior, and Behavioral Health for Female GLWACH Employees (cont.) (n=214)**

Variable Category		Total n	n(%) Injured	Risk Ratio (95% CI)	p-value
Not enough exercise	Yes	151	45%	1.05(0.75-1.47)	0.77
	No	63	43%	1.00	
Overuse of alcohol/drugs	Yes	2	100%	n/a	n/a
	No	212	44%	1.00	
Other unhealthy behavior	Yes	1	0%	n/a	n/a
	No	213	45%	1.00	
Stressed	Yes	82	56%	<i>1.51(1.13-2.03)</i>	<i>&lt;0.01</i>
	No	132	37%	1.00	
Angered	Yes	50	52%	1.24(0.90-1.70)	0.22
	No	164	42%	1.00	
Overwhelmed	Yes	39	54%	1.27(0.91-1.79)	0.19
	No	175	42%	1.00	

Legend  
CI = Confidence Interval

Note:  
Significant categories (p≤0.10) are in italics.

**Table 26. Univariate Analysis: Potential Injury Risk Factors for Female GLWACH Employees (n=214)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Age	18-25	11	64%	2.43(0.66-8.93)	0.18	0.61
	26-39	71	45%	1.14(0.60-2.15)	0.69	
	40-54	86	42%	1.00		
	55+	46	43%	1.07(0.52-2.20)	0.86	
Military status	<i>Enlisted</i>	32	69%	<i>3.54(1.56-8.06)</i>	<i>&lt;0.01</i>	0.02
	Officer	39	44%	1.25(0.61-2.55)	0.55	
	DA Civilian	141	38%	1.00		
	Other	2	100%	n/a	>0.99	
Education level	GED or High School	40	33%	1.00		0.03
	<i>Associate's</i>	48	65%	<i>3.79(1.56-9.20)</i>	<i>&lt;0.01</i>	
	Bachelor's	47	40%	1.41(0.58-3.40)	0.45	
	Master's or Doctorate	57	39%	1.31(0.56-3.05)	0.54	
	Other Professional Degree	22	45%	1.73(0.59-5.04)	0.31	

**Table 26. Univariate Analysis: Potential Injury Risk Factors for Female GLWACH Employees (n=214) (cont.)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-values	Variable p-value
Occupational group	Nurse	43	35%	1.00		0.47
	Physician	10	20%	0.47(0.09-2.48)	0.37	
	Technician	17	53%	2.10(0.67-6.57)	0.20	
	Pharmacy	8	50%	1.87(0.41-8.55)	0.42	
	Medic	11	55%	2.24(0.59-8.58)	0.24	
	<i>Other Medical</i>	34	56%	2.36(0.94-5.95)	0.07	
	Admin	40	43%	1.38(0.57-3.35)	0.48	
	Other/Unspecified	51	45%	1.53(0.67-3.54)	0.32	
Poor eating habits	Yes	99	47%	1.26(0.73-2.17)	0.40	0.40
	No	115	42%	1.00		
Tobacco use	Yes	26	50%	1.29(0.57-2.94)	0.54	0.54
	No	188	44%	1.00		
Poor sleeping habits	Yes	101	50%	1.48(0.86-2.55)	0.16	0.16
	No	113	40%	1.00		
Not enough exercise	Yes	151	45%	1.09(0.60-1.98)	0.77	0.77
	No	63	43%	1.00		
Overuse of alcohol/drugs	Yes	2	100%	n/a	>0.99	>0.99
	No	212	44%	1.00		
Other unhealthy behavior	Yes	1	0%	n/a	>0.99	>0.99
	No	213	45%	1.00		
<b>Stressed</b>	Yes	82	56%	2.16(1.24-3.79)	<0.01	<b>&lt;0.01</b>
	No	132	37%	1.00		
Angered	Yes	50	52%	1.49(0.79-2.82)	0.22	0.22
	No	164	42%	1.00		
Overwhelmed	Yes	39	54%	1.59(0.79-3.20)	0.19	0.19
	No	175	42%	1.00		

Legend

CI = Confidence Interval

Note:

Significant categories (p≤0.10) are in bold. Significant categories (p≤0.10) are in italics.

**Table 27. Multivariable Logistic Regression Results: Injury Risk Factors for Female Employees (n=214)**

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-value	Variable p-value
<b>Stressed</b>	<i>Yes</i>	82	56%	<i>1.96(1.07-3.59)</i>	<i>0.03</i>	<b>0.02</b>
	No	132	37%	1.00		
<b>Education level</b>	GED or High School	40	33%	1.00		<b>0.03</b>
	<i>Associate's</i>	<i>48</i>	<i>65%</i>	<i>4.14(1.61-10.62)</i>	<i>&lt;0.01</i>	
	Bachelor's	47	40%	1.43(0.54-3.75)	0.47	
	Master's or Doctorate	57	39%	1.42(0.50-4.07)	0.51	
	Other Professional Degree	22	45%	1.88(0.60-5.90)	0.28	
Military status	<i>Enlisted</i>	<i>32</i>	<i>69%</i>	<i>3.28(1.34-8.07)</i>	<i>&lt;0.01</i>	0.06
	Officer	39	44%	1.59(0.66-3.82)	0.30	
	DA Civilian	141	38%	1.00		
	Other	2	100%	n/a	>0.99	

Legend

CI = Confidence Interval

Notes:

Significant variables ( $p \leq 0.05$ ) are in bold. Significant categories ( $p \leq 0.05$ ) are in italics.

Variables entered into the backward stepping logistic regression model: Military status, Education level, Occupational group, and Stressed.

## 7 Discussion

The purpose of this survey was to assess health behaviors, health education interests and barriers, and injuries, a leading barrier to readiness, among the employees of the General Leonard Wood Army Community Hospital (GLWACH). A total of 380 employees out of 1,147 completed the survey (33 percent response rate). Over half (56 percent) of respondents were female, 47 percent were age 26-39, 45 percent were DA Civilian employees, 27 percent held Master's or Doctorate degrees, and 20 percent were in other medical professions (i.e., clinical providers other than physician, nurse, or medic). Key findings are discussed below.

### 7.1 Health Behaviors and Health Education Classes

Respondents reported a number of unhealthy behaviors, such as not getting enough exercise, poor diet, and poor sleeping habits. According to the Centers for Disease Control and Prevention (CDC), effective workplace health promotion activities can improve employee health, as well as lower costs in a number of ways: lower insurance premiums, fewer workers' compensation claims, less absenteeism, and increased worker productivity (Anderko et al., 2012).

Specific barriers to healthy eating included lack of time, work, and skipping meals. Barriers to physical activity were lack of time, lack of motivation, and existing medical conditions. Health promotion plans should consider education topics related to overcoming these barriers.

The results of this survey indicate that 78 percent of respondents would be interested in attending health education classes if they were provided at GLWACH, but they are largely concerned about having enough time to do so, as well as the timing of the classes. Once effective classes are established, appropriate scheduling of classes will be essential to assure adequate attendance rates. Morning was the most commonly selected preferred time and Wednesdays were the preferred day. Respondents are especially interested in topics, such as physical fitness, weight management, nutrition, and stress management, which correlate with the predominant self-reported unhealthy behaviors.

## **7.2 Injuries, Types of Injuries, and Injury Activities**

Nearly half of all respondents (47 percent, n=178) reported having at least one injury in the past 12 months; this translated to an estimated 6.0 injuries per 100 employees per month. Civilian employees were injured at a rate of 4.3 injuries per 100 employees per month, compared to 7.4 injuries per 100 military employees per month. The United States Bureau of Labor Statistics reports that private industry hospitals saw 6.4 nonfatal injuries and illnesses per 100 employees in 2013, state government hospitals had 7.7 per 100, and local government hospitals had 6.0 per 100 (Bureau of Labor Statistics Incidence Rate Calculator and Comparison Tool). Rates for GLWACH Civilians were lower than the national averages, likely because the Bureau of Labor Statistics values include illnesses in addition to injuries. Self-reported injury incidence among military GLWACH employees was higher than these private industry and local government hospital estimates, which may be partially attributable to the additional physical training that must be conducted by military personnel.

Lower extremity sprains and strains were the most common self-reported injury among GLWACH military personnel. Similarly high incidence rates for these injuries have been observed in other military populations (USARIEM 1993; Ruscio et al. 2010; Sell et al. 2010; USAPHC 2014). These sprains and strains to the lower extremities often result from physical training and sports (Lauder et al. 2000; Ruscio et al. 2010; Sell et al. 2010), and this was also true for the current survey population. Overexertion injuries are also the most prevalent workplace injuries among healthcare workers (Scott and Newman 2013). However, most overexertion injuries in typical hospital settings can be attributed to occupational lifting, whereas many overexertion injuries in this survey population were due to military physical training.

It has been reported that hospital employees experience a high rate of falls to the same level (Bell et al. 2008). Indeed, this investigation revealed falls to be the second most common mechanism of injuries after running. Injuries among hospital employees, from falls and other mechanisms of injuries, have been attributed to older age (Scott and Newman, 2013), the amount of overtime hospital employees typically have to work (Dembe et al. 2005), consecutive shifts (Hopcia et al. 2012), low job satisfaction (Zontek et al. 2009), and other stressors such as monotonous work or conflicts in interpersonal relationships or collaborations (Salminen 2003). A multifaceted fall prevention program established in three U.S. hospitals reduced slip, trip, and fall rates over 50 percent; this may be an intervention to consider for implementation in military hospitals (Bell et al. 2008).

### **7.3 Risk Factors for Injuries**

Risk factors for injury were assessed for the overall GLWACH population as well as for subgroups (Active Duty, Civilian, male, and female employees), given the potential for differing injury risk factors among these groups and desire to match goals and objectives of injury prevention activities with the target audience(s). Results are grouped and summarized below by risk factors that are typically static (i.e., demographic risk factors) and those that may be modifiable through education or other behavioral interventions (i.e., behavior risk factors).

#### **7.3.1 Demographic Risk Factors**

Being 40 years of age or older was a significant risk factor among Active Duty GLWACH employees. Age (40-54 years) also remained in the multivariable model for injury risk among male respondents, but was not statically significant ( $p=0.07$ ). These results are consistent with other injury studies in similar populations that have identified older age as a risk factor for injury. However, the other investigations had a narrower age range in their study populations and showed even lower ages had significantly increased risk of injury: those over 24 years were reported to be at a higher injury risk among Infantry trainees (USARIEM 1993), over 22 years among enlisted men (Heir, 1998), and over 30 years in FBI trainees (Knapik et al. 2011).

Being an Active Duty Soldier, either enlisted or an officer, was seen to be a significant risk factor for injury among GLWACH survey respondents; additionally, being enlisted was a risk factor for women at the  $p \leq 0.10$  level. Because physical training demands were noted as a frequent mechanism of injury among respondents, it is likely that military personnel are at an increased risk of injury due to their exposure to physical training that is not required for Civilian personnel.

Considering occupation, GLWACH physicians included in this survey had a significantly lower risk of injury than nurses, among all employees, Active Duty, and male respondents. While not many studies have been conducted about the impact of military occupational specialty (MOS) on injury risk, this is consistent with studies that have observed lower injury risk for MOSs with medium or light physical demands (Hollander and Bell 2010; Lincoln et al. 2002). In the U.S., among all healthcare professions, physicians had the lowest median number of nonfatal occupational injuries and illnesses involving days away from work in 2010 (Bureau of Labor Statistics 2010).

Various levels of education were observed to be significant risk factors for respondents in different subgroups of this survey population. Among all employees and women, holding an Associate's degree was observed to be a risk factor. This is consistent with previous studies that have indicated that a lower education level is a risk factor for disability discharge among female Army personnel (Lincoln et al., 2002) and higher rates of lower extremity injuries among male marathon runners (Van Middelkoop et al., 2008). Holding a GED/High School education, graduate degree, or other professional degree was also a significant injury risk factor for GLWACH male employees. Physicians (who have obviously earned advanced degrees) were at lower risk of injury, indicating that the injured male respondents with advanced degrees must be spread out among the other occupational categories.

### 7.3.2 Behavioral risk factors

Overuse of alcohol and/or drugs was found to be an independent injury risk factor among all employees, and is the only risk factor for injury among civilian employees. In both cases, this variable was not removed from the backward stepping logistic regression ( $p \leq 0.10$ ), but it was not significant at the  $p \leq 0.05$  level. It is likely that the number of respondents who overuse alcohol and drugs (only  $n=9$ ) was underreported. “Overuse” was not defined and included drug types were not explained. Therefore, these results should be considered with caution.

Alcohol and drug use has been shown to increase injury risk in previous studies. Habitual moderate alcohol consumption has been shown to be associated with injury occurrence (Cherpitel 1993) across all injury types (Watt et al. 2005). While the effects of drug use on injury incidence has not been specifically studied in military populations, drug use has been shown to triple the odds of accident involvement in the aviation industry (Li et al. 2011). Furthermore, positive marijuana detection in pre-employment drug screening of U.S. postal workers has been identified as a significant risk factor for accidents (Zwerling et al. 1990). In a 2009 review of the literature, Ramchand et al. concluded that an individual’s risk-taking personality disposition (or deviance proneness, often expressed in the form of substance abuse) has a more accurate empirical association with occupational injury occurrence than the abuse of any one specific substance. Among the respondents in this survey, the highest proportion of alcohol/drug overuse was seen among men (4 percent of men reported overuse of alcohol), those 55 years of age and older (5 percent), pharmacy employees (13 percent), and those with a high school or GED-level education (6 percent).

These survey results also indicate that stress is a significant risk factor for injuries among all GLWACH employees, and more specifically among military personnel and women. This is consistent with previous studies that have also shown a higher incidence of injury among military personnel with more personal and occupational stress (Bedno et al. 2014; Bongers et al. 2006; Gregg et al., 2002). In a population of Finnish hospital employees, highly monotonous work and conflicts in interpersonal relationships or collaborations were observed to be significant stressor risk factors for injury (Salminen et al., 2003). Long work hours (Dembe et al. 2005), consecutive shifts (Hopcia et al., 2012), and low job satisfaction (Zontek et al. 2009) have also been reported as stress-related risk factors for hospital employees. Stress has been reported as a significant risk factor for non-occupational injuries like sports and physical training as well (Junge, 2000). The respondents in this survey with the highest rates of stress were women (38 percent of female respondents reported stress), age 40-54 (33 percent), pharmacy employees (50 percent), and those holding other professional degrees (48 percent).

This observed association between reported injuries and stress does not imply a causal relationship; that is, in some cases the injuries may result from stress and in other instances the stress may be a product of the injury. Furthermore, because this survey relied on self-reported feelings of stress, no associations can be made between injury and specific stress-related behavioral health diagnoses (e.g., anxiety, depression, etc.).

This analysis also found higher risk of injury among military employees who reported tobacco use. Male employees who reported tobacco use also had a higher injury risk (not statistically significant,  $p=0.07$ ). This is consistent with many previous studies that have reported tobacco use to be a risk factor for injury among military populations during basic training (Altarac et al. 2000; Grier et al. 2010; Knapik et al. 2001; Munnoch and Bridger 2007). The relationship between tobacco use and

injury may be due to an inhibited ability to heal damaged tissues (USARIEM 1995). Those smokers who are Soldiers engaging in physically demanding tasks in accordance with physical training requirements and/or occupational tasks (such as the most common military injuries reported by respondents in this survey: running, playing sports, or lifting heavy objects) may have reduced/retarded ability to repair damaged tissues, contributing to higher injury rates in this military population. Of the 46 military respondents who reported tobacco use in this survey, 83 percent were men, 50 percent were age 26-39, 35 percent were Medics, 35 percent were Administrative employees, and 50 percent had a GED/high school-level education.

Finally, male survey respondents who reported poor sleeping habits were found to be at higher risk for injury. A recent systematic review indicates that 13 percent of work injuries are associated with sleeping problems, and an employee's risk of injury increases by a factor of 1.6 if they have sleep problems (defined as any sleep disorder affecting sleep quality, sleep quantity, and daytime sleepiness) (Uehli et al. 2013). Over half of male respondents in this survey (n=48, 56 percent) reported poor sleeping habits.

### **7.3.3 Limitations**

The predominant limitations of this study were the self-reported nature of the survey data and its cross-sectional nature. Causal associations could not be investigated, given that injury and health behaviors were measured at the same time. However, the survey allowed for the collection of detailed information specific to GLWACH interests and needs as well as information on causes of injury and civilian injuries, which are not readily available from existing data sources. A fairly low response rate was observed, and efforts should be made in future studies to include a larger portion of the population of interest. Future assessments could include analysis of medical records data from the Defense Medical Surveillance System (military medical encounters) and Force Risk Reduction system (Civilian workers' compensation). Questions about Civilian lost time were not asked and could therefore not be compared to Active Duty lost time data. Future surveys should capture data on Civilian lost time. Furthermore, because alcohol and drug use were presented as a combined risk factor, the effects of either individually could not be determined.

### **7.4 Health Promotion and Prevention Program Planning**

While education has been noted as a critical component of prevention programming (Bullock et al., 2010), it is also essential whenever possible to establish surveillance so that emerging health problems can be detected, the effects of prevention programming can be monitored, and data-driven health promotion and prevention priorities can be established (Jones et al., 2010; Canham-Chervak et al., 2010). Existing data sources such as the Defense Medical Surveillance System, Force Risk Reduction system, and the Medical Readiness Assessment Tool could be assessed for applicability for providing unit-level (GLWACH) data. In addition, evidence-based education programs put in place should strive to incorporate mechanisms for process, outcome, and impact evaluation into their project plans (Thompson and McClintock, 1998).

## **8 Conclusions and Recommendations**

---

### **8.1 Conclusions**

Over three-fourths (78 percent) of respondents said they would be interested in attending health education classes at GLWACH, especially about topics such as physical fitness, weight management, nutrition, and stress management. Though they were not identified as frequently desired topics, cessation classes for tobacco, alcohol, and other drugs should be considered because these behaviors were identified as injury risk factors among GLWACH employees.

The most frequently reported barriers to healthy eating include time, work, and skipping meals; barriers to better physical activity include lack of time, lack of motivation and medical conditions. Anticipated barriers to attendance at health education classes included lack of time and scheduling of classes. Preferred class times were mornings or early evenings (1600-1800) on Wednesdays or Thursdays.

The most common injuries among active duty personnel were sprains and strains to lower extremities resulting from physical training and back strains from lifting heavy objects, consistent with previous investigations of injuries in the military. The most common injuries among Civilian personnel were sprains and strains due to walking and back sprains from lifting. Leading modifiable injury risk factors identified among GLWACH staff were tobacco use and stress. Development of health education materials and programs on these topics is recommended.

### **8.2 Recommendations**

Given that respondents reported receiving health information from the Internet, health professionals, and print materials (books/magazines, professional journals), it may be of value to pursue development of additional methods of health communication.

Health education classes and other health education materials for GLWACH staff should incorporate topics that include respondents' expressed interests such as physical fitness, weight management, nutrition, and stress management. Health promotion activities should also address reported leading barriers to healthy behaviors like lack of time and lack of motivation. Classes should be scheduled at desired times to reduce barriers to attendance.

Health education activities and materials should also address prevention topics for injury risk factors identified among GLWACH staff, such as tobacco use, overuse of alcohol and drugs, poor sleep habits, and stress. Injury prevention topics should address common injuries at GLWACH, including sprains and strains from physical training and lifting.

Establishment of surveillance and/or routine review of employee injury, illness, and health behavior data would enable ongoing monitoring of program effectiveness and form the basis for future data-driven prioritization of health promotion and prevention activities.

## 9 Point of Contact

---

The APHC(Prov) IPP is the point of contact for this project, e-mail [usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil](mailto:usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil), or phone number 410-436-4655, DSN 584-4655. Specific questions may be directed to author(s) listed at the front of this report.

Approved:

BRUCE H. JONES, MD, MPH  
Program Manager  
Injury Prevention Program

DRAFT

## Appendix A

### References

- Altarac M., J.W. Gardner, R.M. Popovich, R. Potter, J.J. Knapik, B.H. Jones. 2000. Cigarette smoking and exercise-related injuries among young men and women. *Am J Prev Med*, 18(3 Suppl):96-102.
- Anderko L., J.S. Roffenbender, R.Z. Goetzel, F. Millard, K. Wildenhaus, C. DeSantis, W. Novelli. 2012. Peer Reviewed: Promoting Prevention Through the Affordable Care Act: Workplace Wellness. *Preventing Chronic Disease*, 9:E175
- Bedno S., K. Hauret, K. Loring, T.C. Kao, T. Mallon, B. Jones. 2014. Effects of personal and occupational stress on injuries in a young, physically active population: a survey of military personnel. *Mil Med*, 179(11):1311-8.
- Bell J.L., J.W. Collins, L. Wolf, et al. 2008. Evaluation of a comprehensive slip, trip and fall prevention programme for hospital employees. *Ergonomics*, 51(12):1906-25.
- Bongers P.M., S. Ijmker, S. Van den Heuvel, B.M. Blatter. 2006. Epidemiology of work related neck and upper limb problems: psychosocial and personal risk factors (part I) and effective interventions from a bio behavioural perspective (part II). *Journal of Occupational Rehabilitation*, 16(3):272-295.
- Bullock S.H., B.H. Jones, J. Gilchrist, S.W. Marshall. 2010. Prevention of physical training related injuries: Recommendations for the military and other active populations based on expedited systematic reviews. *Am J Prev Med*, 38(1S):S156–S181
- Bureau of Labor Statistics. Number and percent distribution of nonfatal occupational injuries and illnesses involving days away from work by occupation and number of days away from work, private industry, 2010. <http://www.bls.gov/iif/oshwc/osh/case/ostb2890.pdf>. (Accessed 2 April 2015.)
- Bureau of Labor Statistics. 2014. Employer-related Workplace Injuries and Illnesses – 2013. <http://www.bls.gov/news.release/pdf/osh.pdf>. (Accessed 2 April 2015.)
- Bureau of Labor Statistics. Incidence Rate Calculator and Comparison Tool. <http://data.bls.gov/iirc/>. (Accessed 2 April 2015.)
- Canham-Chervak M., T.I. Hooper, F.H. Brennan, S.C. Craig, D.C. Girasek, R.A. Schaefer, G. Barbour, K.S. Yew, B.H. Jones. 2010. A Systematic Process to Prioritize Prevention Activities: Sustaining Progress Toward the Reduction of Military Injuries. *Amer J Prev Med*, 38(1S): S11-S18.
- Cherpitel C.J. 1993. Alcohol, injury, and risk-taking behavior: Data from a National Sample. *Alcoholism: Clinical and Experimental Research*, 17(4):762-6.
- Defense Injury and Unemployment Compensation System. 2015. [https://timon.cpmc.osd.mil/osso/jsp/check\\_exp.jsp](https://timon.cpmc.osd.mil/osso/jsp/check_exp.jsp)
- Defense Medical Surveillance System. 2014. <http://afhsc.army.mil/Home/Dmss>
- Department of the Army. 2007. Regulation 40-5, *Preventive Medicine*. <http://www.apd.army.mil/>

Technical Report No. S.0032417-16, Assessment of Health Behaviors, Health Education Interests, and Injuries among GLWACH Employees, October 2014 – December 2014

Dembe A.E., J.B. Erickson, R.G. Delbos, S.M. Banks. 2005. The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the United States. *Occupational and Environmental Medicine*, 62(9):588-97.

Gregg R.L., L.E. Banderet, K.L. Reynolds, J.F. Creedon, V.J. Rice. 2002. Psychological factors that influence traumatic injury occurrence and physical performance. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 18(2):133-9.

Grier T., J.J. Knapik, S. Canada, M. Canham-Chervak, B.H. Jones. 2010. Risk factors associated with self-reported training-related injury before arrival at the U.S. Army ordnance school. *Public Health*, 124(7):417-23.

Headquarters, Department of the Army. 2013. Executive Order 110-13. *Ready and Resilient Campaign Plan*.

Headquarters, U.S. Army Medical Command. 2014. Operations Order 14-37. *MEDCOM Ready and Resilient Campaign*.

Heir, T., G. Eide. 1997. Injury proneness in infantry conscripts undergoing a physical training programme: smokeless tobacco use, higher age, and low levels of physical fitness are risk factors. *Scandinavian Journal of Medicine & Science in Sports*, 7: 304-311.

Hollander I.E. and N.S. Bell. 2010. Physically demanding jobs and occupational injury and disability in the U.S. Army. *Military Medicine*, 175(10):705-712.

Hopcia K., J.T. Dennerlein, D. Hashimoto, T. Orechia, G. Sorensen. 2012. Occupational injuries for consecutive and cumulative shifts among hospital registered nurses and patient care associates: a case control study. *Workplace Health & Safety*, 60(10):437-44.

Jones B.H., M. Canham-Chervak, D.A. Sleet. 2010. An evidence-based public health approach to injury priorities and prevention: recommendations for the U.S. Military, *Amer J Prev Med*, 38(1S): S1-S10.

Junge A. 2000. The influence of psychological factors on sports injuries review of the literature. *The American Journal of Sports Medicine*, 28(S5):S-10-S-15.

Knapik J.J., M.A. Sharp, M. Canham-Chervak, K. Hauret, J.F. Patton, B.H. Jones. 2001. Risk factors for training-related injuries among men and women in basic combat training. *Medicine and Science in Sports and Exercise*, 33(6):946-54.

Knapik J.J., A. Spiess, D. Swedler, T. Grier, K. Hauret, J. Yoder, B.H. Jones. 2011. Retrospective examination of injuries and physical fitness during Federal Bureau of Investigation new agent training. *Journal of Occupational Medicine and Toxicology*, 6:26-36.

Lauder T.D., S.P. Baker, G.S. Smith, A.E. Lincoln. 2000. Sports and physical training injury hospitalizations in the army. *American Journal of Preventive Medicine*, 18(3Sup):118-28.

Li G., S.P. Baker, Q. Zhao, J.E. Brady, B.H. Lang, G.W. Rebok, C. DiMaggio. 2011. Drug violations and aviation accidents: findings from the U.S. mandatory drug testing programs. *Addiction*, 106(7):1287-92.

Technical Report No. S.0032417-16, Assessment of Health Behaviors, Health Education Interests, and Injuries among GLWACH Employees, October 2014 – December 2014

Lincoln A.E., G.S. Smith, P.J. Amoroso, N.S. Bell. 2002. The natural history and risk factors of musculoskeletal conditions resulting in disability among U.S. Army personnel. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 18(2):99-113.

Maneuver Support Center of Excellence. 2014. Operations Order 14-006. *Fort Leonard Wood Community Health Promotion Council (CHPC)*.

Munnoch K. and R.S. Bridger. 2007. Smoking and injury in Royal Marines' training. *Occupational Medicine*, 57(3):214-6.

Ramchand R., A. Pomeroy, J. Arkes. 2009. *The effects of substance use on workplace injuries*. Santa Monica: RAND Corporation.

Ruscio B.A., B.H. Jones, S.H. Bullock, B.R. Burnham, M. Canham-Chervak, C.P. Rennix, T.S. Wells, J.W. Smith. 2010. A process to identify military injury prevention priorities based on injury type and limited duty days. *American Journal of Preventive Medicine*, 38(1 Sup):S19-S33.

Salminen S., M. Kivimäki, M. Elovainio, J. Vahtera. 2003. Stress factors predicting injuries of hospital personnel. *American Journal of Industrial Medicine*, 44(1):32-6.

Scott K. and Newman L. 2013. The Aging Healthcare Workforce: Employment and Occupational Injuries Among Workers in U.S. Private Hospitals During 2010. *Association of Occupational Health Professionals in Healthcare*. Fall 2013 Edition.

Sell T.C., Abt J.P., Crawford K., et al. 2010. Warrior Model for Human Performance and Injury Prevention: Eagle Tactical Athlete Program (ETAP) Part I. *Journal of Special Operations Medicine: A Peer Reviewed Journal for SOF Medical Professionals*, 10(4):2-21.

Thompson NJ, McClintock HO. *Demonstrating Your Program's Worth: A Primer on Evaluation for Programs To Prevent Unintentional Injury*. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 1998.

Uehli K., A.J. Mehta, D. Miedinger, K. Hug, C. Schindler, E. Holsboer-Trachsler, J.D. Leuppi, N. Kunzli. 2013. Sleep problems and work injuries: A systematic review and meta-analysis. *Sleep Med Rev* 18(1):61-73.

U.S. Army Public Health Command. 2014. Injury Prevention Report No. WS.0030637.3. *Evaluation of the Iron Horse Performance Optimization Physical Training Program (IHPO) in a Light Infantry Brigade*. Prepared by: Grier T, Canham-Chervak M, Anderson MK, Bushman TT, and Jones BH. [Available through Defense Technical Information Center, DTIC Accession Number ADA613974.]

U.S. Army Research Institute of Environmental Medicine. 1993. *Epidemiology of Injuries Associated with Physical Training among Young Men in the Army*. Prepared by Jones B.H., D.N. Cowan, J.P. Tomlinson, J.R. Robinson, D.W. Polly, P.W. Frykman. [Available through Defense Technical Information Center, DTIC Accession Number DTIC Accession Number ADA263399.]

U.S. Army Research Institute of Environmental Medicine. 1995. *A Review of the Relationship Between Tobacco Use and Musculoskeletal Injury*. Prepared by Amoroso P., K. Reynolds, and J. Dettori. [Available through Defense Technical Information Center, DTIC Accession Number ADA307023.]

Technical Report No. S.0032417-16, Assessment of Health Behaviors, Health Education Interests, and Injuries among GLWACH Employees, October 2014 – December 2014

Van Middelkoop M., J. Kolkman, J. Van Ochten, S.M. Bierma-Zeinstra, B.W. Koes. 2008. Risk factors for lower extremity injuries among male marathon runners. *Scandinavian Journal of Medicine & Science in Sports*, 18(6):691-7.

Watt K., D.M. Purdie, A.M. Roche, R.J. McClure. 2005. The Relationship Between Acute Alcohol Consumption and Consequent Injury Type. *Alcohol and Alcoholism*, 40(4):263-8.

Zontek T.L., J.C. Isernhagen, B.R. Ogle. 2009. Psychosocial factors contributing to occupational injuries among direct care workers. *AAOHN journal*, 57(8):338-47.

Zwerling C., J. Ryan J., Orav E.J. 1990. The efficacy of preemployment drug screening for marijuana and cocaine in predicting employment outcome. *JAMA*, 264(20):2639-43.

DRAFT

## **Appendix B**

### **Survey Questions**

**Note: Survey was administered electronically; length does not represent actual page length of survey and question numbers represent internal numbering system of Verint® software. Skip patterns are indicated.**

DRAFT

General Leonard Wood Army Community Hospital (GLWACH) Injury and Wellness Survey - Copy  
[English (United States)]

**Descriptive Information**

1. What describes your military status?
  - Enlisted
  - Officer
  - DA civilian
  - Other \_\_\_\_\_
2. What is your gender?
  - Female
  - Male
3. What is your highest educational level?
  - GED
  - High School
  - Associate's
  - Bachelor's
  - Master's
  - Doctorate
  - Other Professional Degree
4. What is your military occupational specialty (MOS), AOC, or Functional Area? (e.g. 11B)  
Please specify \_\_\_\_\_
5. What is your age?
  - Under 18
  - 18-25
  - 25-39
  - 40-54
  - 55 and older
6. Do you have Tricare?
  - Yes
  - No

(End of Page 1)

**Self-Assessed Health**

7. Do you consider yourself healthy?
  - Yes
  - No
8. Does faith or belief play a big part in your overall health?
  - Yes
  - No
9. Do you have any health conditions that COMPLETELY prevent you from participating in physical fitness programs?
  - Yes
  - No

(End of Page 2)

This Question is Conditionally Shown if: (7 = No)

10. Are you interested in becoming healthier?

- Yes
- No

(End of Page 3)

11. What unhealthy activities do you participate in? (Check all that apply)

- Poor eating habits
- Tobacco use
- Poor sleeping habits
- Not enough exercise
- Overuse of alcohol or drugs
- Other \_\_\_\_\_

12. Please rate the overall quality of your current diet:

- Very Good
- Good
- Fair
- Poor

13. Check all of the MyPlate recommendations you follow at meals on most days:

- 1/4 plate non-starchy vegetables (e.g. lettuce, cauliflower, broccoli, carrots, peppers, green beans, spinach, asparagus)
- 1/4 plate whole grains (e.g. whole wheat or whole grain bread or pasta, brown rice)
- 1/4 plate lean meats (e.g. poultry without skin, fish)
- 1/4 plate fruits
- Low-fat dairy products
- None of the above

14. What do you feel are your biggest barriers to healthy eating? (Check all that apply):

- Availability of healthy food
- Time
- Money
- Education
- Do not care
- Sweets / desserts
- Unhealthy snacking
- Emotional eating
- Liquid calories
- Inability to cook
- Social situations
- Poor habits
- Work
- Excessive hunger
- Skipping meals
- Overeating
- Distracted eating (TV / computer)
- Other \_\_\_\_\_
- None

15. How many total health visits do you and your family make in a year? (Slide the slider bar provided or enter data into the text box provided. If you or a family member have not visited a medical specialty listed below, please enter "0" in the text box provided).

Primary care provider \_\_\_\_\_

OB/GYN \_\_\_\_\_

Pediatrics \_\_\_\_\_

Urgent care \_\_\_\_\_

Behavioral health \_\_\_\_\_

Pastor / chaplain \_\_\_\_\_

16. Did you visit any other health professionals not listed in the previous question? (Please include visits for family members):

Yes

No

(End of Page 4)

This Question is Conditionally Shown if: (16 = Yes)

17. Please indicate which other health professional(s) you or your family members visit each year:

Other health professional \_\_\_\_\_

This Question is Conditionally Shown if: (16 = Yes)

18. How many times a year do you or your family members visit these health professionals? (Slide the slider bar provided or enter data into text box)

Frequency (how many times per year) \_\_\_\_\_

(End of Page 5)

### Behavioral Health

19. Please check the box that best applies to you:

Never    Almost Never    Sometimes    Fairly Often    Very Often

In the past month, how often have you felt nervous or stressed?

In the past month, how often have you been angered because of things that were outside of your control?

In the past month, how often have you felt difficulties were piling up so high that you could not overcome them?

### Physical Activity

20. How satisfied are you with your physical activity/exercise?

Very satisfied

Somewhat satisfied

Neither satisfied nor dissatisfied

Somewhat unsatisfied

Very unsatisfied

21. What barriers do you face when trying to improve your physical activity? (Check all that apply):

Lack of experience or knowledge

Lack of time

No child care

Lack of support network

Lack of motivation

No parking near gym facilities

Pain or previous medical diagnosis

Not comfortable with gym crowd

- Financial burden
- Weather
- Other \_\_\_\_\_
- None

22. What would help you most improve your physical activity? (Check all that apply)

- Increased access to personal trainers
- Increased access to group classes
- Increased access to running trails
- Increased access to exercise facilities
- Child care during workout hours
- Time off during the day for exercise
- Incentive
- Formation of exercise clubs
- Beginner's only time at the gym
- More indoor facilities
- Other \_\_\_\_\_

(End of Page 6)

### Health and Wellness Activities

23. How do you get most of your health information? (Check all that apply)

- Books / magazines
- Professional journals
- Health professionals
- Family / friends
- TV / radio / newspaper
- Flyers from health clinics
- Internet / computer
- Other \_\_\_\_\_

24. What health education activities or classes would you be interested in? (Check all that apply)

- Nutrition
- Pregnancy and fitness
- Adult physical fitness
- Child physical fitness
- Quitting tobacco
- Self-care
- Infant care
- Unplanned pregnancy
- Unsafe sex
- Alcohol / drug abuse
- Depression
- Family violence
- Heart health
- Cold weather injury prevention
- Weight management
- Stress management
- Other \_\_\_\_\_
- Not interested in health education activities or classes

25. What time(s) of day would you prefer classes? (Check all that apply)

- Morning
- Afternoon
- Evening (1600-1800)
- Evening (1800-2000)

26. What would limit you from attending health and wellness activities at Fort Leonard Wood? (Check all that apply)

- Lack of child care
- Cost of child care
- Weather
- No one to go with
- Not interested
- Travel distance
- Lack of time
- Parking availability
- Hours that activities are available
- Other \_\_\_\_\_

27. What day(s) of the week would you prefer classes? (Check all that apply)

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

(End of Page 7)

### **Injury History**

The following questions are about physical injuries that you may have experienced. Physical injuries include those caused by:

1) A single incident or accident (examples include tripping and twisting ankle while marching, falling from a ladder, getting hit by / bumping into an object, injuries due to heat or cold, or injuries as a result of an automobile crash).

2) Overuse of a body area (examples include running long distances or repeatedly lifting / pulling / moving objects for job tasks or physical training).

Any physical damage to the body may be considered an injury, especially if medical attention was needed.

If you report more than 1 injury, please first answer the questions pertaining to the injury that MOST limited your physical abilities in the last 12 months (injury #1). You will then be asked the same questions for your SECOND most physically limiting injury (injury #2). If you reported 3 or more injuries, you will only be asked questions on the two most physically limiting injuries.

28. How many injuries have you experienced in the last 12 months?

- None
- 1 injury
- 2 injuries
- 3 or more injuries

(End of Page 8)

Please answer the following questions for your most physically limiting injury within the past 12 months  
This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

29. Estimate the approximate date of your injury.

- October 2013
- November 2013
- December 2013
- January 2014
- February 2014
- March 2014
- April 2014
- May 2014
- June 2014
- July 2014
- August 2014
- September 2014
- October 2014

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

30. What is the primary body area associated with this injury?

- Head
- Neck
- Shoulder
- Upper arm
- Lower arm
- Elbow
- Wrist
- Hand
- Chest / ribs
- Abdomen
- Lower back
- Upper back
- Spine
- Hip
- Upper leg (thigh / hamstring)
- Lower leg (shin / calf)
- Knee
- Ankle
- Foot
- Heat / cold injury - non-specific body area
- Other \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

31. What is the type of injury?

- Abrasion
- Arthritis
- Blister
- Bruise / contusion
- Bursitis
- Cut / laceration
- Dislocation

Technical Report No. S.0032417-16, Assessment of Health Behaviors, Health Education Interests, and Injuries among GLWACH Employees, October 2014 – December 2014

- Fasciitis (e.g. plantar fasciitis)
- Fracture / break
- Heat injury
- Cold injury
- Nerve injury
- Sprain / strain
- Tear (muscle / ligaments / meniscus / cartilage)
- Blunt force trauma
- Spinal Injury (e.g. bulging or slipped disc)
- Other \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

32. Did this injury occur on-duty or off-duty?

- On-duty
- Off-duty
- Unsure

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

33. What activity was associated with this injury?

- Gunshot, missile, or blast
- Lifting or moving heavy objects (list object) \_\_\_\_\_
- Physical training (running)
- Physical training (weightlifting)
- Other physical training (please specify) \_\_\_\_\_
- Repairing or maintaining equipment
- Riding, driving, or moving in / around a motorized vehicle
- Rough-housing or fighting
- Combatives training
- Sports / recreation (please specify) \_\_\_\_\_
- Stepping / climbing
- Walking or hiking
- Marching - with load
- Marching - no load
- Other (please specify) \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

34. What was the specific cause of this injury?

- Falling onto an object / surface
- Contact (hit by / against) an object / surface (list object) \_\_\_\_\_
- Cut or punctured by a tool or object
- Direct contact by a person
- Impact from a blast
- Overuse / repetitive activity (list activity) \_\_\_\_\_
- Single twisting / over-extension
- Single overexertion effort: moved too fast / too much weight
- Specific military task (e.g. parachuting) (please list) \_\_\_\_\_
- Burn (by fire, hot substance or object, or steam)
- Heat or cold injury
- Animal or insect bite
- Other (please list) \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 1 injury OR 28 = 2 injuries OR 28 = 3 or more injuries)

35. Have you been seen by a medical provider for this injury?

- Yes
- No

(End of Page 9)

This Question is Conditionally Shown if: (35 = Yes)

36. Were you put on permanent profile for this injury?

- Yes
- No

(End of Page 10)

This Question is Conditionally Shown if: (36 = No)

37. Were you put on temporary profile for this injury?

- Yes (how long in # of days?) \_\_\_\_\_
- No

(End of Page 11)

This Question is Conditionally Shown if: (37 = Yes (how long in # of days?))

38. Does the temporary profile for this injury limit your physical training or job duties?

- Yes
- No

(End of Page 12)

Please answer the following questions for your SECOND most physically limiting injury within the past 12 months

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

39. Estimate the approximate date of your injury.

- October 2013
- November 2013
- December 2013
- January 2014
- February 2014
- March 2014
- April 2014
- May 2014
- June 2014
- July 2014
- August 2014
- September 2014
- October 2014

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

40. What is the primary body area associated with this injury?

- Head
- Neck
- Shoulder
- Upper arm
- Lower arm
- Elbow
- Wrist
- Hand
- Chest / ribs

- Abdomen
- Lower back
- Upper back
- Spine
- Hip
- Upper leg (thigh / hamstring)
- Lower leg (shin / calf)
- Knee
- Ankle
- Foot
- Heat / cold injury - non-specific body area
- Other \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

41. What is the type of injury?

- Abrasion
- Arthritis
- Blister
- Bruise / contusion
- Bursitis
- Cut / laceration
- Dislocation
- Fasciitis (e.g. plantar fasciitis)
- Fracture / break
- Heat injury
- Cold injury
- Nerve injury
- Sprain / strain
- Tear (muscle / ligaments / meniscus / cartilage)
- Blunt force trauma
- Spinal injury (e.g. bulging or slipped disc)
- Other \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

42. Did this injury occur on-duty or off-duty?

- On-duty
- Off-duty
- Unsure

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

43. What activity was associated with this injury?

- Gunshot, missile, or blast
- Lifting or moving heavy objects (list object) \_\_\_\_\_
- Physical training (running)
- Physical training (weightlifting)
- Other physical training (please specify) \_\_\_\_\_
- Repairing or maintaining equipment
- Riding, driving, or moving in / around a motorized vehicle
- Rough-housing or fighting
- Combatives training
- Sports / recreation (please specify) \_\_\_\_\_

- Stepping / climbing
- Walking or hiking
- Marching - with load
- Marching - no load
- Other (please specify) \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

44. What was the specific cause of this injury?

- Falling onto an object / surface
- Contact (hit by / against) an object / surface (list object) \_\_\_\_\_
- Cut or punctured by a tool or object
- Direct contact by a person
- Impact from a blast
- Overuse / repetitive activity (list activity) \_\_\_\_\_
- Single twisting / over-extension
- Single overexertion effort: moved too fast / too much weight
- Specific military task (e.g. parachuting) (please list) \_\_\_\_\_
- Burn (by fire, hot substance or object, or steam)
- Heat or cold injury
- Animal or insect bite
- Other (please list) \_\_\_\_\_

This Question is Conditionally Shown if: (28 = 2 injuries OR 28 = 3 or more injuries)

45. Have you been seen by a medical provider for this injury?

- Yes
- No

(End of Page 13)

This Question is Conditionally Shown if: (45 = Yes)

46. Were you put on permanent profile for your SECOND most physically limiting injury?

- Yes
- No

(End of Page 14)

This Question is Conditionally Shown if: (46 = No)

47. Were you put on temporary profile for your SECOND most physically limiting injury?

- Yes (how long in # of days?) \_\_\_\_\_
- No

(End of Page 15)

This Question is Conditionally Shown if: (47 = Yes (how long in # of days?))

48. Does the temporary profile for your SECOND most physically limiting injury limit your physical training or job duties?

- Yes
- No

(End of Page 16)

49. Any additional comments?

---

---

---

(End of Page 17)

Thank you for participating in this survey! Your information will assist us in providing improved health education services at Fort Leonard Wood. (End of Page 18)

## **Appendix C**

### **Demographic Trends by Gender and Military Status**

DRAFT

## C-1 SUMMARY

---

Among female respondents, most were 40-54 (40 percent); DA Civilians (66 percent); in professions that were nursing, administration, or other medical (55 percent); with a mix of education levels. (See Table C-1)

Among male respondents, most were 26-39 (45 percent); military members (81 percent); holding either an advanced degree (27 percent) or a high school/GED-level education (28 percent); and in Medic or Technician professions (46 percent). (See Table C-2)

In the enlisted population of survey respondents, most were 26-39 (55 percent); male (73 percent); holding a high school/GED-level education; and in Medic, Technician, and Other Medical professions (90 percent). (See Table C-3)

Among Officer respondents, most are 26-39 (51 percent); male (55 percent); have an advanced degree (72 percent); and have occupations that are Nurses, Physicians, or Other Medical (85 percent). (See Table C-4)

Among DA Civilians, most respondents are 40-54 (45 percent); female (83 percent); have a Bachelor's-level education or below (69 percent); and hold nursing, administration, or other professions (77 percent). (See Table C-5)

**Table C-1. Survey Demographics, Female**

Variable	Categories	Respondents
Age	18-25	11 (5%)
	26-39	71 (33%)
	40-54	86 (40%)
	55+	46 (22%)
Military Status	<b>DA Civilian</b>	<b>141 (66%)</b>
	Enlisted	32 (15%)
	Officer	39 (18%)
	Other	2 (1%)
Education Level	GED or High School	30 (18%)
	Associate's	48 (22%)
	Bachelor's	47 (22%)
	Master's or Doctorate	57 (26%)
	Other Professional Degree	22 (10%)

**Table C-1. Survey Demographics, Female (cont.)**

Variable	Categories	Respondents
Occupation	Other Medical Profession	34 (16%)
	Nurse	43 (20%)
	Administration	40 (19%)
	Medic	11 (5%)
	Technician	17 (8%)
	Physician	10 (5%)
	Pharmacy	8 (4%)
	Other or Unspecified	51 (24%)

**Table C-2. Survey Demographics, Male**

Variable	Categories	Respondents
Age	18-25	23 (14%)
	26-39	74 (45%)
	40-54	52 (31%)
	55+	17 (10%)
Military Status	DA Civilian	28 (17%)
	Enlisted	86 (52%)
	Officer	48 (29%)
	Other	4 (2%)
Education Level	GED or High School	46 (28%)
	Associate's	32 (19%)
	Bachelor's	36 (22%)
	Master's or Doctorate	45 (27%)
	Other Professional Degree	7 (4%)
Occupation	Other Medical Profession	43 (26%)
	Nurse	18 (11%)
	Administration	13 (8%)
	Medic	38 (23%)
	Technician	21 (13%)
	Physician	13 (8%)
	Pharmacy	0
	Other or Unspecified	20 (12%)

**Table C-3. Survey Demographics, Enlisted**

Variable	Categories	Respondents
Age	18-25	31 (26%)
	26-39	65 (55%)
	40-54	22 (19%)
	55+	0
Gender	Female	32 (27%)
	Male	86 (73%)
Education Level	GED or High School	49 (42%)
	Associate's	39 (33%)
	Bachelor's	22 (19%)
	Master's or Doctorate	3 (<1%)
	Other Professional Degree	5 (4%)
Occupation	Other Medical Profession	41 (35%)
	Nurse	0
	Administration	7 (6%)
	Medic	47 (40%)
	Technician	18 (15%)
	Physician	0
	Pharmacy	3 (3%)
	Other or Unspecified	2 (2%)

**Table C-4. Survey Demographics, Officers**

Variable	Categories	Respondents
Age	18-25	1 (1%)
	26-39	44 (51%)
	40-54	39 (45%)
	55+	3 (3%)
Gender	Female	39 (45%)
	Male	48 (55%)
Education Level	GED or High School	0
	Associate's	0
	Bachelor's	20 (23%)
	Master's or Doctorate	62 (72%)
	Other Professional Degree	5 (6%)
Occupation	Other Medical Profession	21 (24%)
	Nurse	31 (36%)
	Administration	7 (8%)
	Medic	0
	Technician	0
	Physician	22 (25%)
	Pharmacy	0
	Other or Unspecified	6 (7%)

**Table C-5. Survey Demographics, DA Civilians**

Variable	Categories	Respondents
Age	18-25	1 (<1%)
	26-39	34 (20%)
	40-54	76 (45%)
	55+	58 (34%)
Gender	Female	141 (83%)
	Male	28 (17%)
Education Level	GED or High School	37 (22%)
	Associate's	41 (24%)
	Bachelor's	39 (23%)
	Master's or Doctorate	33 (20%)
	Other Professional Degree	19 (11%)
Occupation	Other Medical Profession	13 (8%)
	Nurse	30 (18%)
	Administration	39 (23%)
	Medic	2 (1%)
	Technician	19 (11%)
	Physician	1 (<1%)
	Pharmacy	5 (3%)
	Other or Unspecified	60 (36%)

## **Appendix D**

### **Health Education Topics of Interest by Gender, Military Status, and Occupation**

DRAFT

## D-1 SUMMARY

Men were more likely to answer “not interested” (34 percent), women and Civilians requested weight management classes more frequently than adult physical fitness classes (women: 58 percent vs. 52 percent; Civilians: 59 percent vs. 51 percent), and those in Other Medical professions are much more interested in nutrition classes than nurses (57 percent Other Medical vs. 30 percent Nurses).

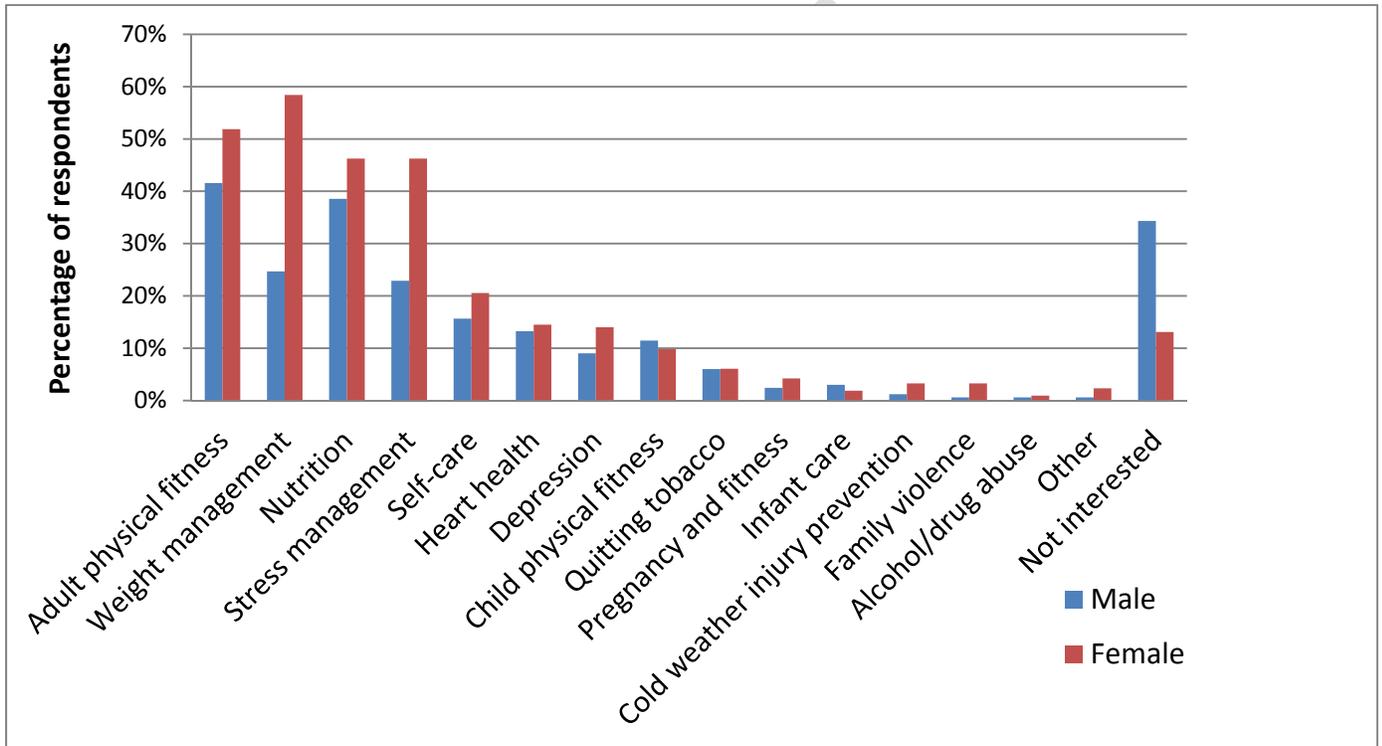


Figure D-1. Health Education Topics of Interest by Gender

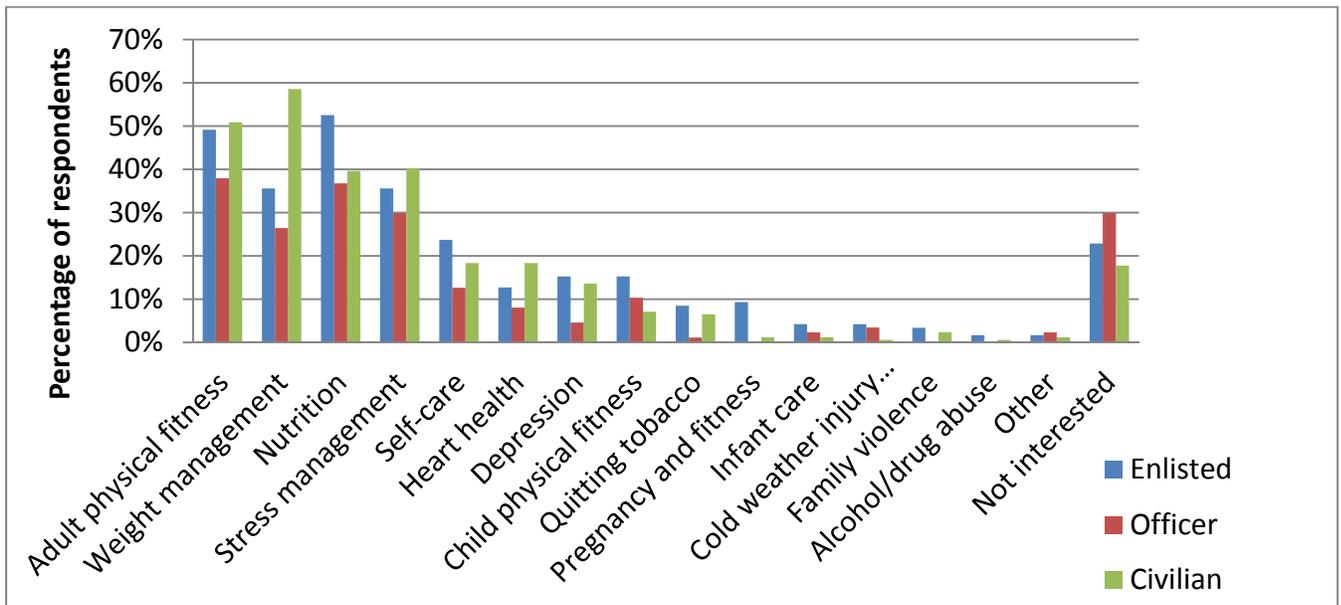


Figure D-2. Health Education Topics of Interest by Military Status

DRAFT

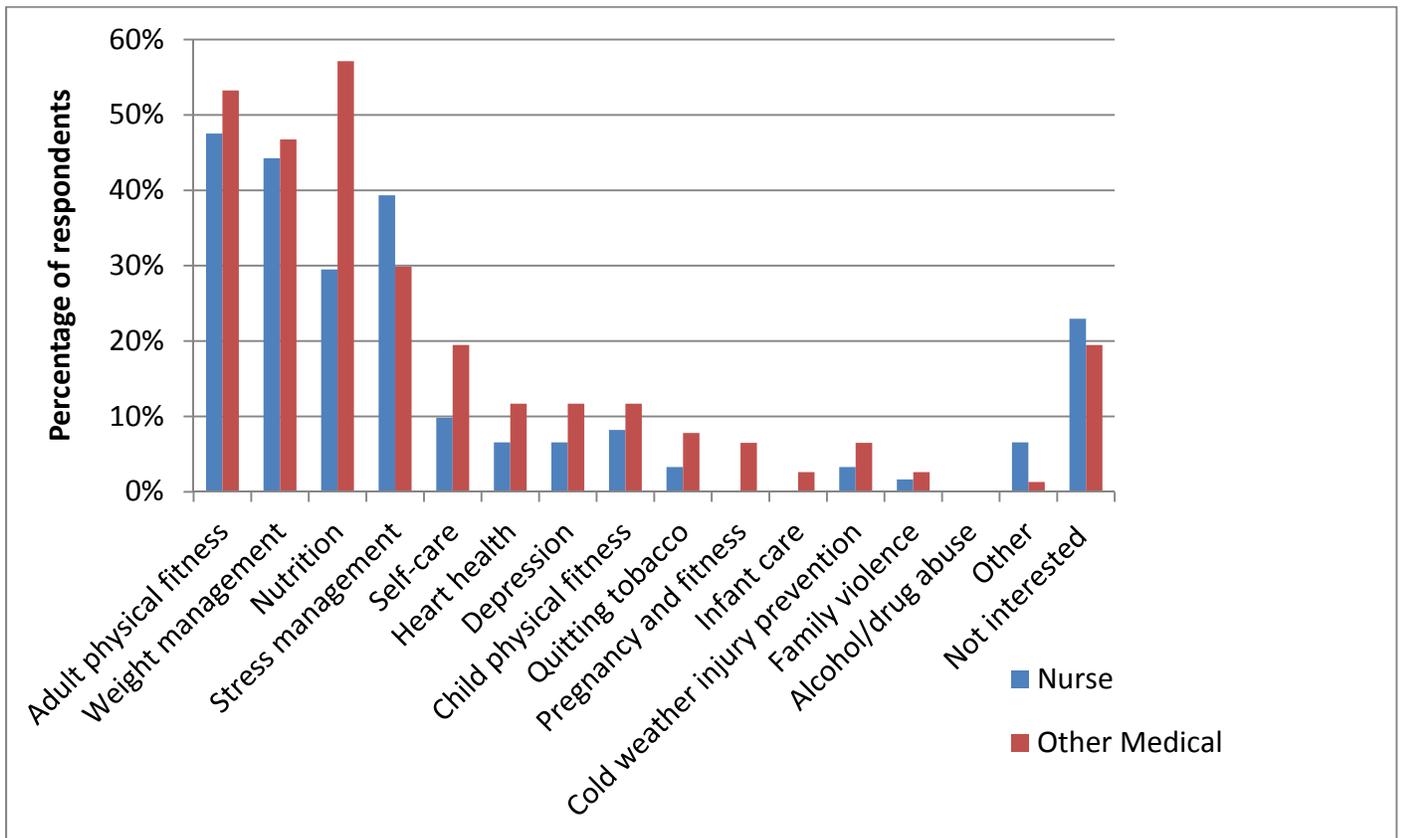


Figure D-3. Health Education Topics of Interest by Occupation

## **Appendix E**

### **Injury Types, Mechanisms, and Associated Activities among Soldiers**

## E-1 SUMMARY

Among General Leonard Wood Army Community Hospital Soldiers, the most common injury types were sprain/strains and tears (Table D-1) and the most common mechanisms of injury were overuse/repetitive activity and single twisting/overexertion (Table D-2). Running for physical training was associated with the highest number of injuries resulting in temporary and permanent profiles, followed by physical training (not running or weightlifting) (Table D-3).

**Table E-1. Injury Types and Profiles for Soldiers, n=161 Injuries**

Injury Type	Total Soldiers Injured n(%)	Total Injuries resulting in Temporary Profile	Total Limited Duty Days	Average Limited Duty Days per Injury Type	Total Injuries Resulting in Permanent Profile
Sprain/Strain	48 (30%)	17	651	38	4
Tear	22 (14%)	10	1,180	118	5
Dislocation	13 (8%)	7	260	37	2
Other/ unspecified Overuse	11 (7%)	5	238	48	1
Arthritis	10 (6%)	2	310	155	2
Blunt Force/Trauma	10 (6%)	4	178	45	1
Fracture/Break	9 (6%)	5	285	57	0
Bruise/Contusion	4 (2%)	1	10	10	0
Fasciitis	4 (2%)	1	14	14	0
Spinal injury	4 (2%)	1	90	90	2
Cut/Laceration	3 (2%)	2	74	37	0
Abrasion	3 (2%)	2	8	4	0
Nerve injury	3 (2%)	2	120	60	1
Bursitis	2 (1%)	1	14	14	0
Tendinitis	1 (1%)	1	30	30	0
Unknown	5 (3%)	1	60	60	1
Other	9 (6%)	5	69	14	2
<b>Total</b>	<b>161</b>	<b>68</b>	<b>3,591</b>	<b>-</b>	<b>21</b>

**Table E-2. Mechanisms of Injury and Profiles for Soldiers, n=161 Injuries**

<b>Mechanism</b>	<b>Total Soldiers Injured n(%)</b>	<b>Total Injuries resulting in Temporary Profile</b>	<b>Total Limited Duty Days</b>	<b>Average Limited Duty Days per Activity</b>	<b>Total Injuries resulting in Permanent Profile</b>
Overuse / repetitive activity	64(40%)	29	1,497	52	11
Single twisting / over-extension	23(14%)	11	575	52	1
Single overexertion effort: moved too fast / too much weight	19(12%)	9	804	89	2
Falling onto an object / surface	17(11%)	8	254	32	3
Direct contact with a person	9(6%)	4	105	26	1
Contact (hit by / against an object / surface)	8(5%)	8	178	22	0
Specific military task (e.g., parachuting)	3(2%)	0	0	-	1
Heat or cold injury	0	0	0	-	0
Animal or insect bite	0	0	0	-	0
Cut or puncture by a tool or object	0	0	0	-	0
Unknown	6(4%)	1	30	30	0
Other	12(7%)	9	148	16	2
<b>Total</b>	<b>161</b>	<b>68</b>	<b>3,591</b>	<b>-</b>	<b>21</b>

**Table E-3. Injury Activities and Profiles for Soldiers, n=161 Injuries**

Activity	Total Soldiers Injured n(%)	Total Injuries resulting in Temporary Profile	Total Limited Duty Days	Average Limited Duty Days per Activity	Total Injuries resulting in Permanent Profile
Physical Training (Running)	54(34%)	26	1,365	53	7
Physical Training (Not Running or Weightlifting)	17(11%)	3	150	50	3
Lifting or Moving Heavy Objects	15(9%)	5	164	41	3
Sports or Recreation	14(9%)	6	370	62	2
Walking or Hiking	11(7%)	4	255	64	1
Physical Training (Weightlifting)	9(6%)	4	490	123	1
Combatives Training	5(3%)	1	30	30	1
Stepping or Climbing	4(2%)	4	224	56	0
Riding, driving, or moving around/in a motorized vehicle	4(2%)	3	58	19	1
Other Training	4(2%)	2	50	25	0
Marching with load	3(2%)	2	169	85	1
Rough-housing or fighting	2(1%)	1	60	60	0
Work-related	2(1%)	0	0	-	0
Repairing or Maintaining Equipment	1(1%)	1	14	14	0
Unknown	4(2%)	2	150	75	0
Other	12(7%)	4	42	11	1
<b>Total</b>	<b>161</b>	<b>68</b>	<b>3,591</b>	<b>-</b>	<b>21</b>