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14. ABSTRACT The U.S. Army Reserve Command (USARC) and the U.S. Army Training and Doctrine Command (TRADOC) Center for Initial Military Training (CIMT) requested assistance from the Defense Centers for Public Health - Aberdeen (DCPH-A) Injury Prevention Branch (IPB) to evaluate the USARC Health and Holistic Fitness (H2F) Pilot Program. This document summarizes and archives results from the baseline phase of the evaluation. More than half of Reserve Component (RC) Soldiers in the Pilot population (61%, n=2,095) completed baseline surveys reporting demographics, personal characteristics, recent injuries, physical activity participation, fitness test performance, health behaviors, health knowledge, and wellness. More than a quarter (28%) of men and one third (35%) of women reported at least one injury in the previous 12 months. Over half (51%) of all injuries occurred when activated/on-duty. Injuries were most often strains (19%) and sprains (12%), involved the lower back (21%) and knees (19%), and were associated with running (22%) and weight lifting (18%). Risk factors for physical training-related injury, body composition, and factors associated with passing the Army Combat Fitness Test (ACFT) were explored. Injuries among men were associated with older age, higher body mass index (BMI), fewer hours of sleep per night, not participating in sprint-training, and doing a moderate amount of exercise per week. Among women, injuries were associated with older age, higher BMI, and moderate or high-perceived stress. For men, obesity was associated with older age, Hispanic ethnicity, lifetime tobacco use, slower ACFT 2-mile run times, and better ACFT standing power throw performance. For women, obesity was associated with older age and slower 2-mile run times. Among male Reserve Component Soldiers, passing the ACFT was significantly associated with lower BMI, Military Police occupational specialty, participating in physical training, and doing more than 75 minutes of vigorous exercise per week. For women, passing was associated with lower BMI, medium or heavy occupational physical demands, and doing high intensity interval training. When the follow-up survey is completed, all baseline and follow-up results will be captured, analyzed, and compared in a comprehensive technical report to inform actionable recommendations to USARC to guide future H2F implementation strategies.			
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U.S. Army Reserve Command Holistic Health and Fitness Pilot Evaluation Baseline Results, July 2020-December 2021

This document summarizes and archives baseline results of the Defense Centers for Public Health–Aberdeen (DCPH-A), formerly the U.S. Army Public Health Center (APHC), Injury Prevention Branch’s (IPB) evaluation of the U.S. Army Reserve Command (USARC) Health and Holistic Fitness (H2F) Pilot. Additional details and analyses will be provided in a final technical report, which will compare baseline and follow-up results and provide recommendations to USARC.

INTRODUCTION

On 1 October 2020, the Army adopted new doctrine for the physical and non-physical readiness training of Soldiers, the comprehensive H2F System.¹ The five domains of the H2F System include physical readiness, nutritional readiness, mental readiness, spiritual readiness, and sleep readiness. H2F implements the Total Force Fitness paradigm, which includes eight domains of readiness: psychological, spiritual, social, physical, medical, nutritional, environmental, and behavioral.² H2F also operationalizes a new Army Physical Fitness Test, the Army Combat Fitness Test (ACFT), which consists of six events to assess physical performance: dead lift, standing power throw, hand release pushups, sprint-drag-carry, plank, and 2-mile run. All components of the Army are implementing H2F; all Active-Duty Soldiers must have an ACFT on record by 1 April 2023 and Reserve Component Soldiers must have one by 1 April 2024.³

There over 200,000 total Army Reserve Component (RC) Soldiers.⁴ The USARC is a unique population that is not often included in standard Army medical data surveillance. Prior USARC survey data indicate that RC Soldiers have higher levels of obesity and fitness test fail rates than Active-Duty Soldiers.⁵ Lower aerobic fitness has been consistently associated with injury risk in Active-Duty Army populations, as measured by run time during the Army Physical Fitness Test.^{6,7,8} Higher body mass index (BMI) has also been associated with injury risk, though not as consistently as lower aerobic fitness.⁶

Because the approach established by the Department of the Army for implementing H2F emphasizes unit leadership-led physical training modifications,¹ it was determined to be untenable for the USARC, given the geographic dispersion and limited contact time with Army RC Soldiers. Furthermore, USARC did not anticipate funding to execute H2F for fiscal years 2020-2023. Therefore, the USARC developed an innovative model to pilot H2F among selected USARC groups. The USARC H2F Pilot Program began in September 2021 and was described in U.S. Army Reserve Command Operation Order 21-012,⁹ Fragmentary Order 1 to Operation Order 21-012,¹⁰ and U.S. Army Reserve Command Operation Order 22-046.¹¹ Selected USARC Troop Program Units (TPUs) in the southeast geographical region of the United States were identified by the USARC to participate in the H2F Pilot Program. Two implementation groups are executing pilot program strategies and one comparison group is not implementing specific H2F programming beyond required ACFT participation and Army-wide H2F guidance. The USARC has strategically assigned TPUs to the three groups to achieve a comparable population in each group (1,000-1,200 RC Soldiers per group). Some updates are being implemented during Pilot Year 2 (1 August 2022-31 July 2023), compared to Pilot Year 1 (1 August 2021-31 July 2022). The implementation strategies are summarized below:^{10,11}

Implementation Group #1 – RC Soldiers in this pilot group took part in the following unit-level education courses and utilize a mobile platform:

- Unit-level education provided by an H2F team consisting of medical and fitness professionals: a Physical Therapist (PT), Occupational Therapist (OT), strength and conditioning specialist, dietitian, and cognitive enhancement / mental performance specialist.
- Courses take place on two weekend days per year.
 - Update for Pilot Year 2: Course frequency changed to 90-minute sessions once per month on drill weekends.
- Courses are supplemented by a strength and conditioning mobile platform that deliver customized, periodized, or phased physical training programs with videos, detailed coaching cues, and limited artificial intelligence capability that can adjust training programs in real time.
- Additional educational materials about H2F-relevant topics are available on the All Partners Access Network (APAN) website.
- Master Fitness Trainers (MFTs) and Master Resiliency Trainers (MRTs) integrate H2F principles in physical training, with an MFT/MRT-to-student ratio of 1:50.
 - Update for Pilot Year 2: changed to an MFT/MRT-to-student ratio of 1:100.
- Reach back support from a full-time Human Performance Advisor provided to unit MFTs and MRTs.

Implementation Group #2 – RC Soldiers in this group are offered the following:

- H2F education materials available on the APAN site.
- MFTs and MRTs integrate H2F principles in physical training, with an MFT/MRT-to-student ratio of 1:50.
 - Update for Pilot Year 2: changed to an MFT/MRT-to-student ratio of 1:100.
- Reach back support from a full-time Human Performance Advisor will be provided to unit MFTs and MRTs.

Group #3/Comparison Group – RC Soldiers in this group participate in no additional H2F Pilot implementation beyond ACFT testing. This group will have no education products or resources, no Human Performance support, and no established MFT/MRT-to-student ratio.

DCPH-A IPB assistance with evaluation of the USARC H2F Pilot Program was requested by USARC and the U.S. Army Training and Doctrine Command (TRADOC) Center for Initial Military Training (CIMT), which is the Army H2F proponent. An Army Execution Order¹² establishes DCPH-A responsibilities to support the TRADOC CIMT with H2F program evaluations. This project will investigate the implementation of H2F and its impact on the ACFT performance and will assess pilot program effects on Army RC Soldiers' readiness to perform duties in an activated status. USARC outcomes of interest include ACFT performance, body composition, injury rates, and injury details such as injured body part and mechanism of injury.

While health behaviors, physical fitness, and injury prevalence among U.S. Army RC Soldiers has been explored in the past,^{13,14,15,16,17,18} injury rates, injury causes, and injury-related activities for U.S. Army RC Soldiers have not been previously reported in the literature. Likewise, potential changes to body composition, physical fitness, physical training activities, health behaviors, and health knowledge resulting from the implementation of programmatic training guidance and health education have also not been previously evaluated in the RC. Therefore, achieving a better understanding of injuries among U.S. Army RC Soldiers and filling this knowledge gap will be a secondary benefit of this work. Interestingly, the Australian Army has conducted several unit-level evaluations of Reserve injuries and has reported widespread

similarities in injury rates, injury types, and injury mechanisms among Army RC Soldiers when compared to their Active-Duty counterparts.^{19,20,21,22,23}

METHODS

The evaluation of the USARC H2F Pilot Program is utilizing electronic surveys to capture demographics, personal characteristics, injuries, physical performance, physical training activities, health behaviors, and health knowledge at baseline and 12 months later in the identified H2F Pilot TPUs. When possible, medical record data, Army Physical Fitness Test performance records, body composition records, and wearable fitness tracker data is linked to survey data through social security number (SSN) or Department of Defense Identifier (DoD ID), to supplement the self-reported survey data. This evaluation was approved as a public health practice by the DCPH-A public health review board.

This report describes results of the baseline survey administered in July-December 2021 and was nearly concurrent with the implementation of the USARC H2F Pilot, which began in September 2021. The DCPH-A IPB provided a link to the electronic survey, which was distributed to pilot participants by USARC leadership. The survey was voluntary, and USARC leadership provided time during training weekends for RC Soldiers to complete the survey. Survey questions emphasized Army RC Soldier injuries during the previous 12 months and potential impacts on readiness, ability to deploy, and ability to perform duties in an activated status. The baseline survey captured information related to the timeframe before the implementation of the USARC H2F Pilot. The follow-up survey is scheduled for January-March 2023 and will capture the same information following implementation of the H2F Pilot.

Data analysis

Statistical analyses of the baseline data were completed in SAS® 9.4 and IBM SPSS® 26. Data from multiple sources were merged into one master database. These sources included survey responses, demographic data from unit rosters, and demographic and medical encounter data from the Defense Medical Surveillance System (DMSS), as well as demographic, fitness test performance, and body composition data available from the Defense Training Management System (DTMS).

Descriptive statistics were presented and stratified by sex for this analysis. To quantify differences between RC Soldiers and their Active-Duty counterparts, independent t-tests were used to compare the current survey responses to analogous responses among an Active-Duty Army population that previously underwent a similar H2F transition.²⁴ Multiple logistic regression models were used to determine variables significantly associated with the following outcomes of interest: 1) experiencing at least one physical training-limiting injury, 2) obese body composition, and 3) passing the ACFT. Variables for age, BMI, race, ethnicity, lifetime tobacco use, and ACFT 2-mile run time (aerobic fitness) were included in regression models *a priori*, and other variables were selected through stepwise modeling. Physical training-limiting injuries were identified as self-reported injuries in which the respondent also answered that their physical training needed to be somewhat or completely modified due to the injury. Obesity was defined as having a training record indication of BMI ≥ 30 , which is consistent with Centers for Disease Control and Prevention and World Health Organization definitions of obesity.^{25,26} ACFT pass status was based on 2021 (ACFT 3.0) scoring standards.²⁷

Table 1 provides the overarching guiding questions and associated data analysis plan for this evaluation, including planned future assessments of follow-up data and comparisons between the baseline and follow-up data. All planned data analysis is contingent upon sufficient survey response data.

Table 1. Guiding Questions and Analysis Plan, USARC H2F Pilot Evaluation, Baseline and Follow-up

Guiding Question	Data source(s)	Statistical Analysis Plan
1) What differences are observed in Army RC Soldiers' outcomes (ACFT performance, injury rates, injury types, injury mechanisms, and injured body regions) following USARC H2F implementation of Pilot programs? Does the H2F instruction strategy have an impact?	• Surveys – Injury and Fitness Test Performance sections • Medical record data • Fitness Test record data	• Descriptive statistics • Injury incidence rates • Paired-sample t-tests, Generalized Estimating Equation (Poisson or negative binomial), and Bhapkar's test/generalized McNemar's test will be used to compare various baseline and follow-up results • Independent t-tests will be used to compare follow-up results between implementation groups
2) What differences are observed in Army RC Soldiers' injury risk factors following USARC H2F implementation of Pilot programs? Does the H2F instruction strategy have an impact?	• Surveys – Injury, Demographics, Physical Training, and Health Behaviors sections	• Univariate analysis • Multivariable logistic regression risk factor analysis, with known risk factor variables included <i>a priori</i> • Differences between baseline and follow-up, and implementation groups, will be discussed
3) What differences are observed in Army RC Soldiers' health behaviors and health knowledge (sleep, activity, nutrition) following USARC H2F implementation of Pilot programs? Does the H2F instruction strategy have an impact?	• Surveys – Injury, Health Behaviors, and Health Knowledge sections	• Paired-sample t-tests will be used to compare baseline and follow-up results • Independent t-tests will be used to compare follow-up results between implementation groups
4) What are common injuries and causes of injury among Army RC Soldiers?	• Surveys – Injury section	• Descriptive statistics

BASELINE RESULTS

A power/sample size calculation conducted in SAS indicates that a statistically significant injury risk reduction ($p=0.05$) of 20% can be detected if approximately one-third (33%) the planned population size (approximately 1,200 RC Soldiers per implementation and comparison group) complete the survey ($n=400$ respondents in each group, for a total of 1,200 respondents).

Preliminary baseline results emphasizing descriptive statistics and comparisons to Active-Duty Army data were briefed to USARC leadership in March 2022 (see Appendix A). A comprehensive briefing of all baseline survey data was presented in June 2022 (see Appendix B). Appendices were modified slightly from the original products.

Rosters indicated 3,414 RC Soldiers were in participating pilot units. From July to December 2021, 2,095 electronic survey responses were collected, including from 512 that had in-processed into these units and were not on initial rosters. Survey respondents were predominantly male (72%), white (60%), had an average age of 31, and had an average BMI of 27 (with 22% reporting height and weight consistent with obesity). Compared to the overall U.S. Active-Duty Army population,²⁸ the USARC H2F Pilot population had a higher proportion of women, had a higher proportion of Black Soldiers, were older, and had a higher average BMI (with a higher proportion of obese Soldiers). Because the USARC H2F Pilot population was made up of selected units only from the southeast region of the U.S., these traits may not represent the overall U.S. Army Reserve population. The majority of RC Soldiers in the USARC H2F Pilot passed their most recent ACFT (70%), similar to an Active-Duty H2F Pilot population

(68%).²⁴ Appendices A and B summarize the descriptive statistics for several other demographics, personal characteristics, physical activity and fitness aspects, and health behaviors.

As reported in Appendices A (pages A-6 – A-9) and B (pages B-4 – B-6), of the 2,095 survey respondents, 28% of men and 35% of women reported at least one injury in the previous 12 months. A total of 626 respondents reported 872 first- and second-most limiting injuries. Over half (51%) of all injuries occurred when activated/on-duty. Injuries were most often strains (19%) and sprains (12%), involved the lower back (21%) and knees (19%), and were associated with running (22%) and weight lifting (18%). These injury rates, injury types, and associated activities are comparable to those reported in Active-Duty populations.^{24,29} Likewise, the distribution of medical encounter injuries in the USARC H2F Pilot population was similar to the Active-Duty Army distribution,^{30,31} with 60% of injuries being cumulative micro-traumatic overuse injuries that often result from physical training. (Note: only 20% (n=770) of USARC H2F Pilot participants had a medical record for an injury diagnosis, which is likely not representative of all medical encounters; medical records in DMSS only reflect encounters that were either treated in a Military Treatment Facility or paid for using TRICARE®. If an RC Soldier visited a non-military provider and used civilian insurance, that encounter is not captured in DMSS.)

Appendix B also reports detailed results of several multiple logistic regression models to explore associations between demographics, personal characteristics, fitness, health behaviors, and wellness while controlling for known factors influencing injury risk. For men, factors associated with injury risk ($p \leq 0.05$) were as follows (in order of importance):

- ≤ 5 hours sleep per night (Odds Ratio (OR) $_{\leq 5/\geq 8 \text{ hours}} = 2.23$);
- Age greater than or equal to 35 years (OR $_{35-44/17-24 \text{ years}} = 1.76$ and OR $_{\geq 45/17-24 \text{ years}} = 2.15$);
- No participation in weekly sprint training (OR $_{0-5/\geq 160 \text{ minutes}} = 1.94$);
- 157-360 minutes of weekly exercise (OR $_{157-360/20-156 \text{ minutes}} = 1.87$);
- BMI greater than or equal to 27.5 (OR $_{\geq 27.5/\leq 24.9 \text{ kg/m}^2} = 1.70$).

Among female respondents, factors were as follows (in order of importance):

- Age greater than or equal to 35 years (OR $_{\geq 35/17-24 \text{ years}} = 2.01$);
- BMI greater than or equal to 30 (OR $_{\geq 30/\leq 24.9 \text{ kg/m}^2} = 1.95$);
- Moderate or high perceived stress (OR $_{\text{moderate-high/low stress}} = 1.67$).

Similar factors were also associated with obesity. Among men, obesity was associated with (in order of importance):

- Slower ACFT 2-mile run time (OR $_{17.4-19.8/\leq 17.4 \text{ minutes}} = 2.13$ and OR $_{\geq 19.9/\leq 17.4 \text{ minutes}} = 6.92$);
- Better ACFT standing power throw performance (OR $_{7.7-9.2/\leq 7.6 \text{ meters}} = 1.54$ and OR $_{\geq 9.3/\leq 7.6 \text{ meters}} = 3.21$);
- Older age (OR $_{25-34/17-24 \text{ years}} = 2.11$ and OR $_{35-44/17-24 \text{ years}} = 2.38$ and OR $_{\geq 45/17-24 \text{ years}} = 2.90$);
- Hispanic ethnicity (OR $_{\text{Hispanic/Non-Hispanic}} = 1.66$);
- Lifetime tobacco use (OR $_{\text{Used tobacco/Never used tobacco}} = 1.41$).

For women, obesity was associated with (in order of importance):

- Slower ACFT 2-mile run time (OR $_{\geq 20.7/\leq 20.7 \text{ minutes}} = 3.66$);
- Older age (OR $_{25-34/17-24 \text{ years}} = 2.43$ and OR $_{\geq 35/17-24 \text{ years}} = 2.77$).

Comparable, but complementary, factors were also associated with passing the ACFT. Men were more likely to pass the ACFT if they were (in order of importance):

- Not obese (BMI under 30, $OR_{27.5-29.99/\geq 30 \text{ kg/m}^2} = 2.56$ and $OR_{25-27.49/\geq 30 \text{ kg/m}^2} = 5.36$ and $OR_{<25/\geq 30 \text{ kg/m}^2} = 7.63$);
- Participated in physical training ($OR_{20-150/<20 \text{ minutes}} = 1.64$ and $OR_{>150/<20 \text{ minutes}} = 1.83$);
- In a Military Police military occupational specialty (MOS) ($OR_{\text{Military Police/Other MOS}} = 1.69$);
- Regularly achieved the vigorous activity goal set forth by the American College of Sports Medicine (at least 75 minutes per week, $OR_{\geq 75/<75} = 1.38$).

Similarly, women were more likely to pass the ACFT if they were (in order of importance):

- Not obese or high overweight (BMI under 27.5, $OR_{<25/\geq 30 \text{ kg/m}^2} = 6.85$ and $OR_{25-27.5/\geq 30 \text{ kg/m}^2} = 4.64$);
- Participated in high intensity interval training for physical training ($OR_{\geq 61/<5 \text{ minutes per week}} = 4.07$ and $OR_{5-60/<5 \text{ minutes per week}} = 1.80$);
- In a civilian occupation with medium or high physical demands ($OR_{\text{Heavy/Light Physical Demands}} = 2.65$ and $OR_{\text{Medium/Light Physical Demands}} = 2.06$).

Appendix C shows statistical comparisons of demographic distributions among survey respondents and non-respondents in the pilot population, based on DMSS data available for all Soldiers on TPU rosters. Survey respondents were significantly different from non-respondents by sex (respondents were more often men), age (respondents were older on average), race (more white respondents), and highest education level (respondents were more educated). It will be important to continue controlling for these differences in future analyses.

FOLLOW-UP RESULTS, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS: FORTHCOMING

When the follow-up survey is complete, a comprehensive technical report will capture all baseline and follow-up results and analyses, according to the analysis plan in Table 1, which includes comparisons between the baseline and follow-up timeframes and across implementation groups. Results from both periods will inform actionable recommendations to USARC to guide future H2F implementation strategies.

QUESTIONS

For additional information, please visit the DCPH-A IPB website at <https://phc.amedd.army.mil/topics/discond/ptsaip/Pages/default.aspx>, or by email at usarmy.apg.medcom-hq.mbx.injuryprevention@health.mil.

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Appendix A

Briefing: Preliminary Baseline Results and Comparison to an Active-Duty Population, March 2022

USARC H2F Evaluation: Preliminary Descriptive Summary, Baseline Survey Results



U.S. ARMY PUBLIC HEALTH CENTER

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10 March 2022



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U.S. Army Public Health Center



Survey Respondent Demographics and Characteristics

U.S. Army Public Health Center



Baseline Survey Respondents



- Total: 2,095 survey respondents
- Sex:
 - 72% men
 - 27% women
 - 1% Prefer not to answer
- Rank:
 - 77% Enlisted
 - 22% Officer
 - 1% Warrant Officer, other
- Implementation group:
 - 37% Pilot Alpha
 - 26% Pilot Bravo
 - 37% Comparison
- Race:
 - 63% White
 - 31% Black or African American
 - 4% Asian
 - 2% American Indian/Alaskan Native
 - 1% Native Hawaiian/Pacific Islander
 - 4% Other/prefer not to answer
- Ethnicity:
 - 18% Hispanic or Latinx

U.S. Army Public Health Center



Baseline Survey Respondents




- Total: 2,095 survey respondents
- Education level:
 - <1% Non-HS graduate
 - 47% HS/GED
 - 17% Associate's
 - 24% Bachelor's
 - 8% Master's
 - 2% Doctorate
 - 2% Other
- Military status:
 - 60% TPU
 - 20% AGR
 - 1% MilTech
 - 1% ADOS
 - 18% Other*

*Other responses may reflect "do not know"
- MOS group (Top 3):
 - 21% Military police
 - 21% Medical
 - 19% Engineers

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Demographics and Health Behaviors USARC survey responses, and similar Active Duty responses (Men)		
	This survey: USARC H2F Pilot Baseline survey, 2021 (n=1,517)	Active Duty Comparison: AD H2F Baseline survey, 2019 (n=4,229)
Age (years, mean $\pm$ SD)	31.0 $\pm$ 9.6*	28.8 $\pm$ 7.9
Height (inches, mean $\pm$ SD)	70.1 $\pm$ 3.3	70.0 $\pm$ 3.2
Weight (lbs, mean $\pm$ SD)	189.8 $\pm$ 32.8*	184.1 $\pm$ 27.6
BMI (kg/m ² , mean $\pm$ SD)	27.1 $\pm$ 4.2*	26.4 $\pm$ 3.5
Est % BF (mean $\pm$ SD)	21.4 $\pm$ 5.4*	20.8 $\pm$ 4.4
Obese (BMI $\geq$ 30) %	24.1*	14.3
Cigarette Smokers %	9.3*	14.6
E-cigarette Users %	8.2	8.1
Smokeless Tobacco Users %	10.6*	13.9
Sleep Duration (hours, mean $\pm$ SD) - weekday	6.8 $\pm$ 2.4*	6.1 $\pm$ 1.3
Sleep Duration (hours, mean $\pm$ SD) - weekend	7.5 $\pm$ 2.3*	

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*Statistically different from AD comparison $p \leq 0.05$

Demographics and Health Behaviors USARC survey responses, and similar Active Duty responses (Women)		
	This survey: USARC H2F Pilot Baseline survey, 2021 (n=563)	Active Duty Comparison: AD H2F Baseline survey, 2019 (n=969)
Age (years, mean $\pm$ SD)	29.6 $\pm$ 9.1*	28.6 $\pm$ 7.5
Height (inches, mean $\pm$ SD)	64.5 $\pm$ 3.3*	64.9 $\pm$ 3.0
Weight (lbs, mean $\pm$ SD)	153.4 $\pm$ 28.0*	147.8 $\pm$ 20.8
BMI (kg/m ² , mean $\pm$ SD)	25.9 $\pm$ 4.2*	24.7 $\pm$ 2.8
Est % BF (mean $\pm$ SD)	33.3 $\pm$ 5.4*	32.0 $\pm$ 4.1
Obese (BMI $\geq$ 30) %	16.3*	4.5
Cigarette Smokers %	2.1*	6.8
E-cigarette Users %	1.8*	4.5
Smokeless Tobacco Users %	1.2	2.2
Sleep Duration (hours, mean $\pm$ SD) - weekday	7.1 $\pm$ 2.9*	6.0 $\pm$ 1.4
Sleep Duration (hours, mean $\pm$ SD) - weekend	7.7 $\pm$ 2.7*	

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Additional Characteristics	

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Additional Characteristics USARC H2F Pilot Participants	
	USARC H2F Pilot Baseline survey, 2021 (n=2,095)
Median time in Reserves (years)	4.0
Ever deployed with Reserves %	31.5
Number of times deployed with Reserves ($\pm$ SD)	1.7 $\pm$ 1.1
Previous Active Duty service %	24.5

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Additional Characteristics																																	
<table> <tr> <th>Top 3 categories of civilian occupations</th><th>Responses % (n=2,095)</th></tr> <tr> <td>Healthcare Practitioners</td><td>13%</td></tr> <tr> <td>Protective Service</td><td>10%</td></tr> <tr> <td>Management</td><td>7%</td></tr> </table> <i>*5% wrote in AGR, will add as a response option in follow-up survey</i> <table> <tr> <th>Experience shift change for Reserves vs. Civilian Job</th><th>Responses % (n=2,095)</th></tr> <tr> <td>Yes</td><td>32%</td></tr> <tr> <td>No</td><td>68%</td></tr> </table>	Top 3 categories of civilian occupations	Responses % (n=2,095)	Healthcare Practitioners	13%	Protective Service	10%	Management	7%	Experience shift change for Reserves vs. Civilian Job	Responses % (n=2,095)	Yes	32%	No	68%	<table> <tr> <th>Physical Demands of Civilian Job</th><th>Responses % (n=2,095)</th></tr> <tr> <td>Light</td><td>35%</td></tr> <tr> <td>Medium</td><td>49%</td></tr> <tr> <td>Heavy</td><td>16%</td></tr> </table> <table> <tr> <th>Health Insurance Status *Select all that apply</th><th>Responses % (n=2,095)</th></tr> <tr> <td>Civilian Health Insurance</td><td>39%</td></tr> <tr> <td>TRICARE</td><td>49%</td></tr> <tr> <td>Other Ex: VA or state insurance</td><td>3%</td></tr> <tr> <td>No health insurance</td><td>14%</td></tr> </table>	Physical Demands of Civilian Job	Responses % (n=2,095)	Light	35%	Medium	49%	Heavy	16%	Health Insurance Status *Select all that apply	Responses % (n=2,095)	Civilian Health Insurance	39%	TRICARE	49%	Other Ex: VA or state insurance	3%	No health insurance	14%
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Injury

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Self-reported Injuries - Men




606 respondents (29%) reported a total of 858 first- and second- most physically limiting injuries in the previous 12 months

Self-Reported Injury Details (Men)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=1,517)	Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=4,238)
% injured	28.0*	40.4
% Injuries seen by a medical provider	54.6*	73.9
% provider-seen injuries resulted in a profile	30.0*	53.9
Limited Duty Days (mean ± SD)	63.6 ± 82.4*	57.9 ± 80.4
% provider-seen injuries resulted in limited physical training (PT)	73.1	-
Days with limited PT (mean ± SD)	101.0 ± 134.7	-

*Statistically different from AD comparison $p \leq 0.05$

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Self-reported Injuries - Women		
Self-Reported Injury Details (Women)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=563)	Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=960)
% injured	35.0*	48.6
% Injuries seen by a medical provider	59.7*	81.4
% provider-seen injuries resulted in a profile	42.5*	54.4
Limited Duty Days (mean $\pm$ SD)	51.8 $\pm$ 67.8*	63.5 $\pm$ 79.1
% provider-seen injuries resulted in limited physical training (PT)	74.4	-
Days with limited PT (mean $\pm$ SD)	99.2 $\pm$ 130.2	-

*Statistically different from AD comparison $p \leq 0.05$

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Self-reported Injuries	
Reasons for not seeing a provider *Select all that apply	n(%) (n=238)
My injury was not severe enough to require medical care	116 (48.74%)
I did not have time to seek care	39 (16.39%)
I did not want to get a profile	22 (9.24%)
I did not have health insurance	19 (7.98%)
I tried to seek care but could not find an appointment that fit with my schedule	17 (7.14%)
Other <i>Ex: knew how to self-treat</i>	25 (10.50%)

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Injured Body Area for Men and Women (Top 5)				
Body Area (Men)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=589 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=2466 injuries)	
	n	%	n	%
Back (Lower)	128	21.7	445	18.0
Knee	119	20.2	437	17.7
Shoulders	67	11.4	265	10.7
Ankle	45	7.6	265	10.7
Foot	32	5.4	196	7.9
Body Area (Women)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=262 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=656 injuries)	
	n	%	n	%
Knee	54	20.1	106	16.2
Back (Lower)	49	18.2	119	18.1
Shoulders	38	14.1	51	7.8
Ankle	20	7.4	58	8.8
Hip	19	7.1	70	10.7

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Injury Types for Men and Women (Top 5)				
Injury Type (Men)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=589 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=2466 injuries)	
	n	%	n	%
Strained muscle	120	20.4	402	16.3
Sprained joint	80	13.6	277	11.2
Pain in body part	66	11.2	263	10.7
Runner's knee	41	7.0	178	7.2
Overuse muscle pain	31	5.3	215	8.7
Injury Type (Women)	This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=262 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=656 injuries)	
	n	%	n	%
Strained muscle	43	16.0	79	12.0
Overuse muscle pain	27	10.0	58	8.8
Sprained joint	25	9.3	68	10.4
Pain in body part	25	9.3	74	11.3
Fracture/break	19	7.1	29	4.4

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Injury Activities for Men and Women (Top 5)				
Injury Activity (Men)		This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=589 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=2466 injuries)
	n	%	n	%
Running	128	21.8	861	34.9
Weight Lifting	106	18.0	342	13.9
Lifting heavy objects	65	11.1	170	6.9
Sports/Recreation	31	5.3	157	6.4
Riding/driving MV	28	4.8	54	2.2
Injury Activity (Women)		This survey: USARC H2F Pilot Baseline survey, 2021 Past 12 months (n=269 injuries)		Active Duty Comparison: AD H2F Baseline survey, 2019 Past 12 months (n=656 injuries)
	n	%	n	%
Running	62	23.1	224	34.1
Weight Lifting	45	16.7	77	11.7
Lifting heavy objects	35	13.0	62	9.5
Walking/hiking	21	7.8	21	3.2
Road Marching	14	5.2	16	2.4

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APFT and ACFT Performance

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APFT Physical Fitness Test Performance USARC survey responses, and similar Active Duty responses (Men)		
	This survey: USARC H2F Pilot Baseline survey, 2021 (n=1,517)	Comparison: Active Duty H2F Baseline Survey, 2019 (n=4,229)
APFT Push-ups (reps, mean $\pm$ SD)	49.6 $\pm$ 19.0*	61.9 $\pm$ 13.3
APFT Sit-ups (reps, mean $\pm$ SD)	53.4 $\pm$ 20.2*	65.9 $\pm$ 11.9
APFT 2-mile run time (minutes, mean $\pm$ SD)	16.2 $\pm$ 2.3*	15.1 $\pm$ 1.5

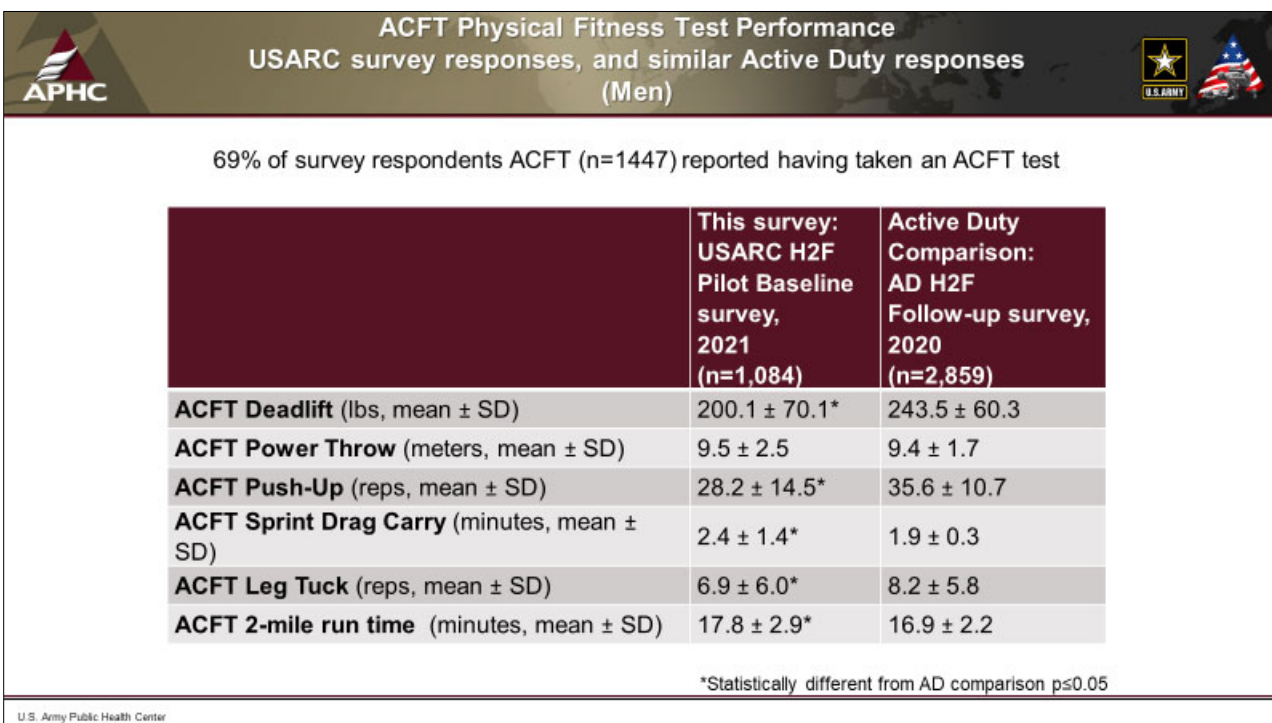
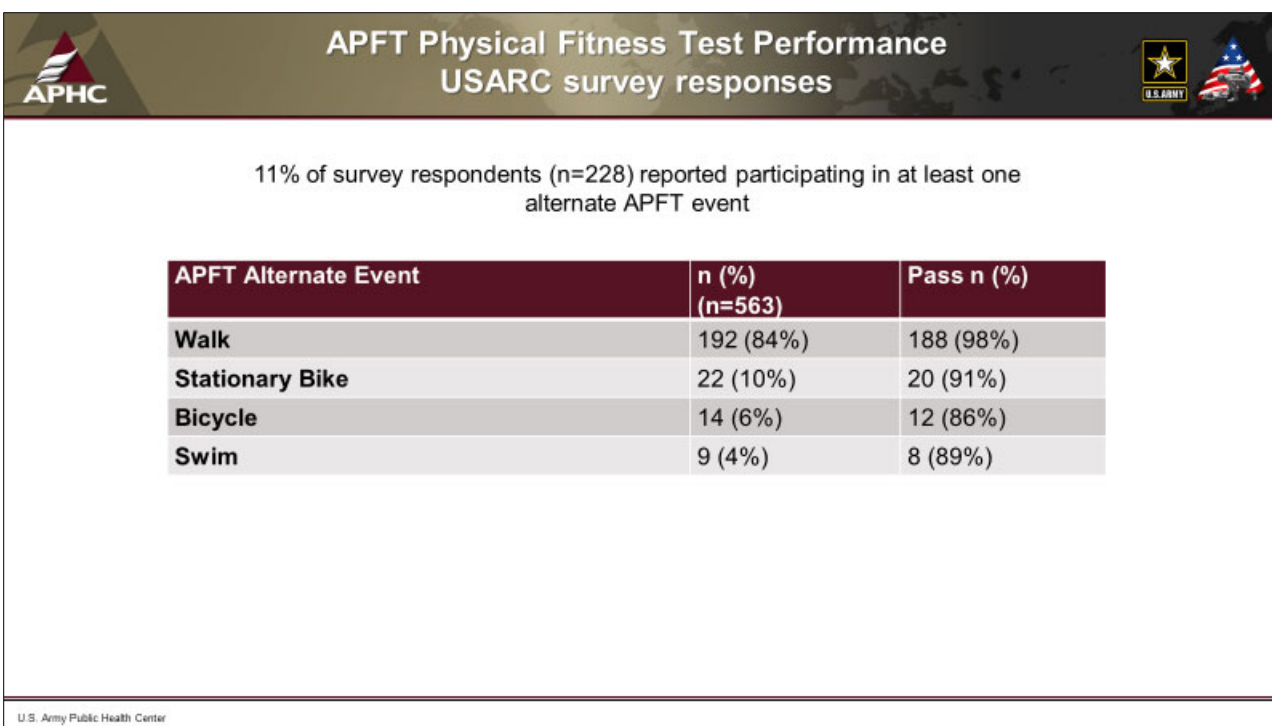
*Statistically different from AD comparison $p \leq 0.05$

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APFT Physical Fitness Test Performance USARC survey responses, and similar Active Duty responses (Women)		
	This survey: USARC H2F Pilot Baseline survey, 2021 (n=563)	Comparison: Active Duty H2F Baseline Survey, 2019 (n=969)
APFT Push-ups (reps, mean $\pm$ SD)	27.1 $\pm$ 15.2*	38.1 $\pm$ 4.1
APFT Sit-ups (reps, mean $\pm$ SD)	49.1 $\pm$ 22.7*	63.9 $\pm$ 17.2
APFT 2-mile run time (minutes, mean $\pm$ SD)	19.0 $\pm$ 2.5*	17.3 $\pm$ 1.7

*Statistically different from AD comparison $p \leq 0.05$

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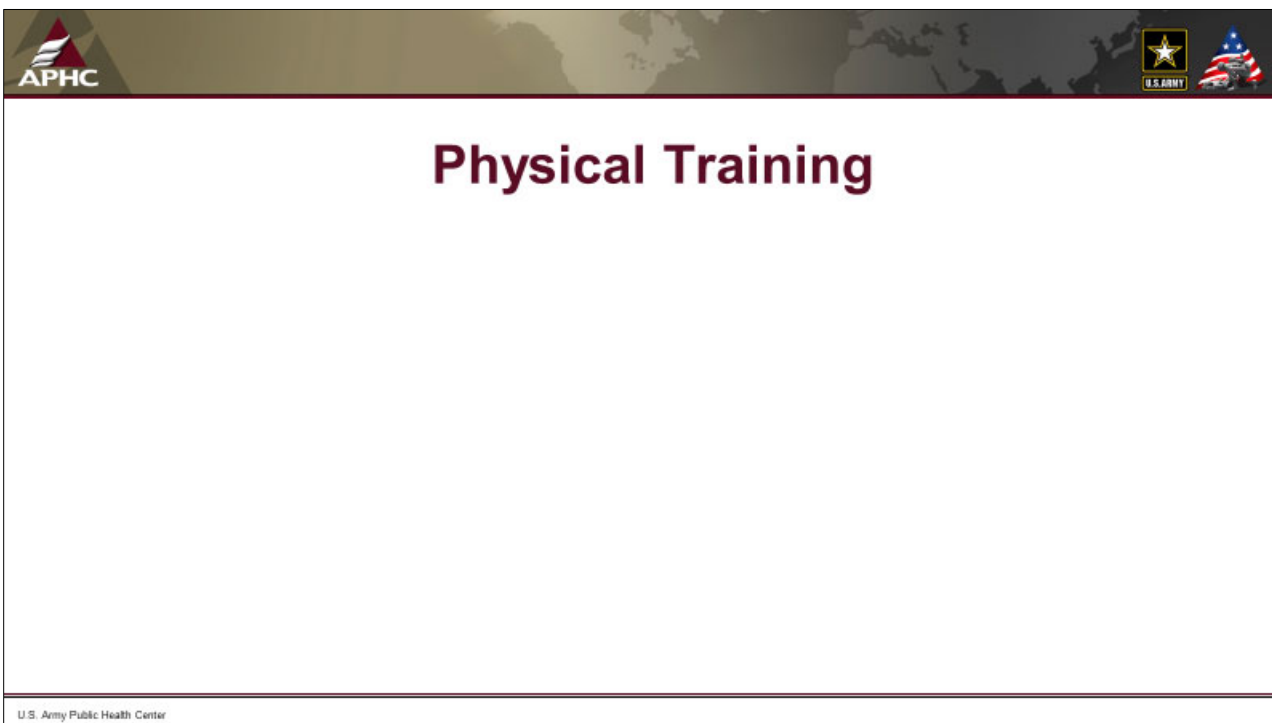
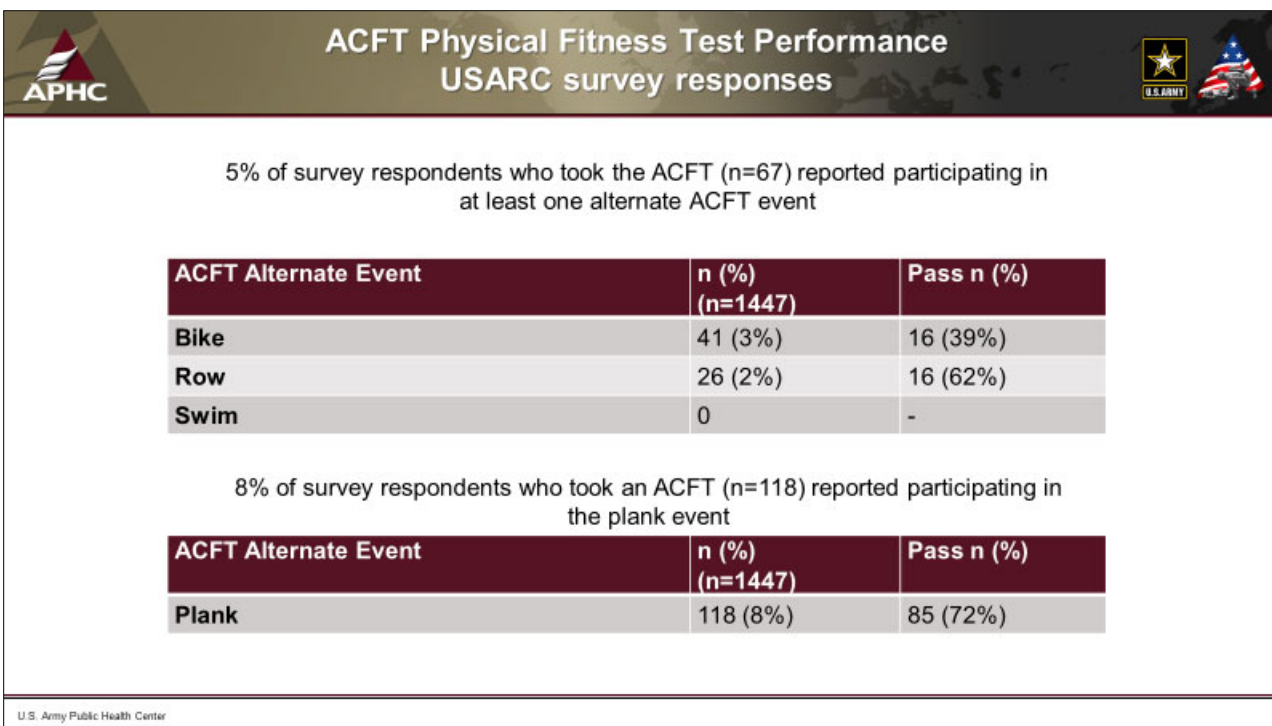
ACFT Physical Fitness Test Performance USARC survey responses, and similar Active Duty responses (Women)		
	This survey: USARC H2F Pilot Baseline survey, 2021 (n=350)	Active Duty Comparison: AD H2F Follow-up survey, 2020 (n=661)
ACFT Deadlift (lbs, mean $\pm$ SD)	153.9 $\pm$ 37.8*	169.1 $\pm$ 33.7
ACFT Power Throw (meters, mean $\pm$ SD)	6.0 $\pm$ 2.4	5.8 $\pm$ 1.5
ACFT Push-Up (reps, mean $\pm$ SD)	18.8 $\pm$ 9.9*	24.2 $\pm$ 10.1
ACFT Sprint Drag Carry (minutes, mean $\pm$ SD)	2.9 $\pm$ 1.0*	2.4 $\pm$ 0.4
ACFT Leg Tuck (reps, mean $\pm$ SD)	3.7 $\pm$ 4.6*	2.1 $\pm$ 3.7
ACFT 2-mile run time (minutes, mean $\pm$ SD)	20.4 $\pm$ 3.3*	18.3 $\pm$ 2.2

*Statistically different from AD comparison $p \leq 0.05$

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ACFT Physical Fitness Test Performance USARC survey responses	
9% of survey respondents who participated in the ACFT (n=135) reported being on profile for at least one ACFT event	
ACFT Alternate Event	n (%) (n=1447)
2-mile Run	122 (8%)
Sprint Drag Carry	59 (4%)
Leg Tuck	52 (4%)
Standing Power Throw	51 (4%)
Deadlift	47 (3%)
Push-ups	46 (3%)

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Physical Training	
82% of respondents (n=1,723) reported participating in physical training to maintain physical fitness	
Workout Locations *Select all that apply	Responses n (%) (n=1,723) *Select all that apply
Commercial Gym	981 (47%)
Home (indoors)	756 (31%)
Home (outdoors)	647 (31%)
Outdoor space (not home or military base) <i>Ex: Park, neighborhood, hiking trail</i>	394 (19%)
Gym on a military base	181 (9%)
Outdoor space on a military base	102 (5%)
Other space <i>Ex: Work/school</i>	50 (2%)

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Physical Training for Men		
	This survey: USARC H2F Pilot Baseline survey, 2021	Active Duty Comparison: AD H2F Baseline survey, 2019 Personal PT
Reported PT Participation	83.5% (1266/1517)	78.8% (3334/4229)
Reported PT Participation between 20-840 Minutes per week	68.9% (1045/1517)	70.8% (2996/4229)
Run - Miles per week (n)	7.4 ± 6.7* (1045)	6.5 ± 6.9 (2972)
Run - Minutes per week (n)	61.6 ± 56.4* (1045)	50.4 ± 54.3 (2980)
Sprinting - Minutes per week (n)	23.4 ± 38.5* (1045)	30.7 ± 43.8 (2953)
Calisthenics - Minutes per week (n)	29.5 ± 48.5* (1045)	37.6 ± 55.7 (2959)
Cross-Training - Minutes per week (n)	22.8 ± 45.1* (1045)	44.7 ± 68.8 (2961)
Agility Training - Minutes per week (n)	15.1 ± 29.7* (1045)	17.4 ± 33.9 (2944)
HIIT - Minutes per week (n)	29.9 ± 51.1 (1045)	-
Other Aerobic - Minutes per week (n)	33.3 ± 62.9 (1045)	-
Resistance Training - Minutes per week (n)	78.5 ± 112.9* (1045)	65.1 ± 92.6 (2958)
Total Exercise Time per week (n)	294.0 ± 205.2* (1045)	324.1 ± 204.6 (2996)

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*Statistically different from AD comparison p≤0.05

Physical Training for Women		
	This survey: USARC H2F Pilot Baseline survey, 2021	Active Duty Comparison: AD H2F Baseline survey, 2019 Personal PT (not Unit PT)
Reported PT Participation	80.1%* (452/563)	58.0% (562/969)
Reported PT Participation between 20-840 Minutes per week	65.4%* (368/563)	52.7% (511/969)
Run - Miles per week (n)	6.0 ± 5.9* (368)	7.3±4.6 (503)
Run - Minutes per week (n)	57.1 ± 56.3* (368)	66.2±38.5 (477)
Sprinting - Minutes per week (n)	26.4 ± 55.1* (368)	41.2±37.1 (504)
Calisthenics - Minutes per week (n)	26.6 ± 47.5* (368)	42.0±47.6 (500)
Cross-Training - Minutes per week (n)	29.5 ± 55.4* (368)	46.0±47.6 (500)
Agility Training - Minutes per week (n)	10.8 ± 23.0* (368)	30.4±38.7 (497)
HIIT – Minutes per week (n)	37.2 ± 56.9 (368)	-
Other Aerobic - Minutes per week (n)	42.4 ± 60.2 (368)	-
Resistance Training - Minutes per week (n)	64.2 ± 81.2* (368)	39.8±45.9 (506)
Total Exercise Time per week (n)	294.1 ± 195.9* (368)	263.8±134.8 (511)

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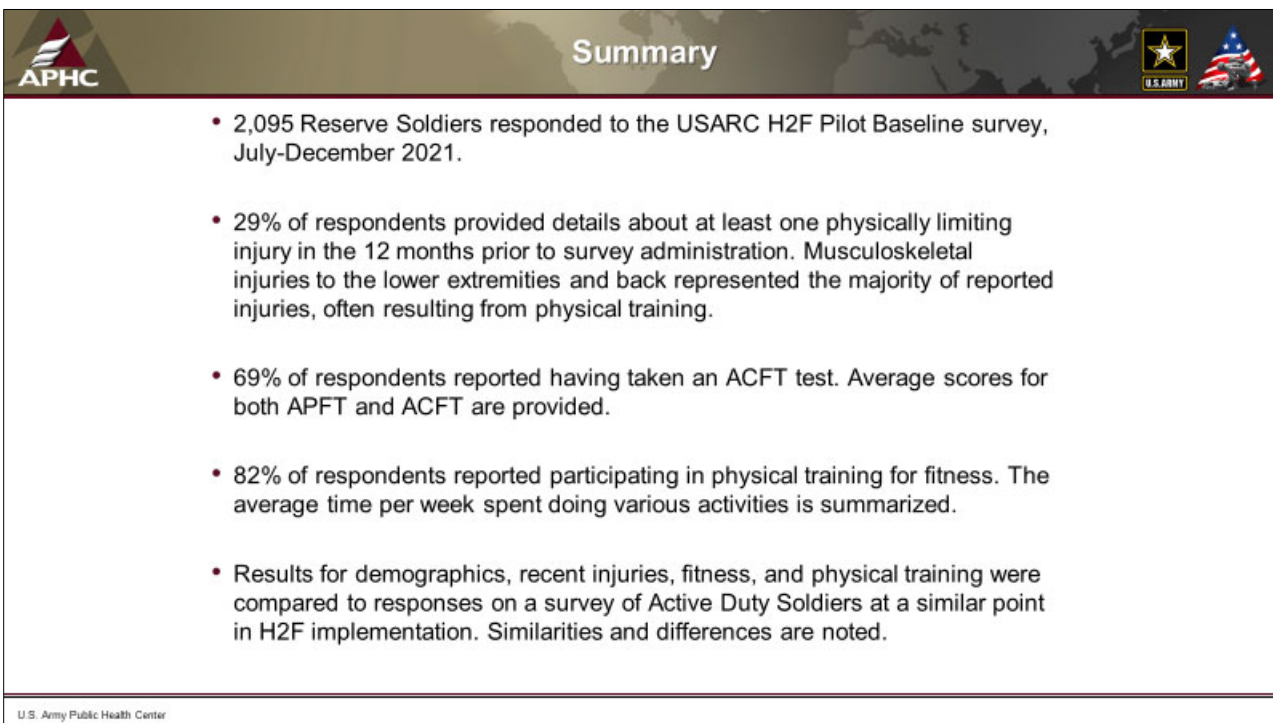
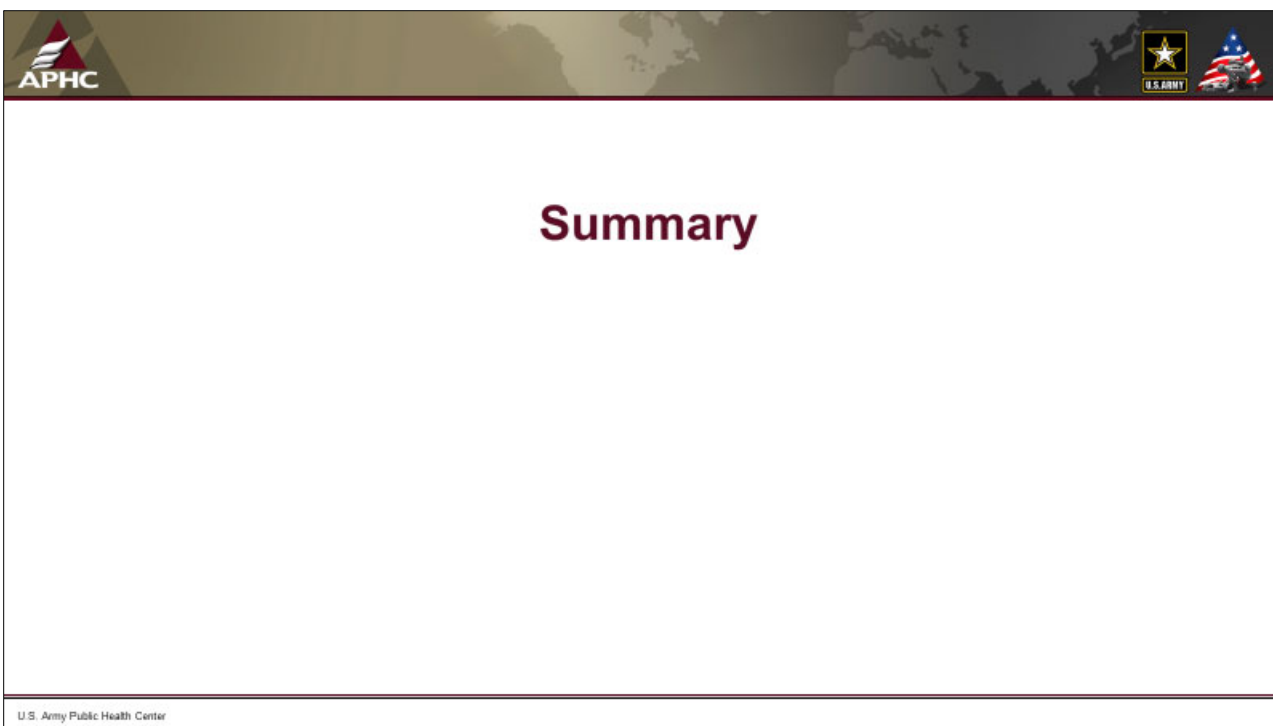


Additional Health Behaviors

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Additional Health Behaviors	
	 
Activity	n=2,041
Average weekly minutes of moderate activity	146 ± 323
Average weekly minutes of vigorous activity	106 ± 233
Average weekly minutes of resistance training	110 ± 203
Nutrition	n=2,033
Average servings of fruit	3-6 servings per week
Average servings of vegetables	3-6 servings per week
Average servings of protein	2-3 servings per day
Average servings of dairy	3-6 servings per week
Average servings of grains	1 serving per day
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Additional Health Behaviors	
	 
Impacts of the COVID-19 pandemic and related restrictions *Select all that apply	n (%) (n=2,014)
Physical training	861 (42.8%)
Mental health	465 (23.1%)
Sleep	416 (20.7%)
Nutrition	405 (20.1%)
Access to medical care	221 (11%)
Other health-related aspect <i>Ex: work, COVID-19 side effects</i>	29 (1.4%)
None	765 (36.5%)
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Appendix B

Briefing: Baseline Results, June 2022

USARC H2F Evaluation: Baseline Results



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Dr. Anna Renner, PhD
Mr. Tyson Grier, MS
Ms. Olivia Mahlmann, MPH
Dr. Michelle Chervak, PhD, MPH

June 30, 2022



Disclaimer



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2





Survey Respondent Demographics and Characteristics

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Survey Responses: Complete vs. Partially Complete

Survey Responses	Sex	Age (years, mean $\pm$ SD)	BMI (kg/m ² , mean $\pm$ SD)
Complete survey only n=2,011	73% men	30.7 $\pm$ 9.5	26.8 $\pm$ 4.3
Partially complete survey only, at least through recent injuries n=84	67% men	30.0 $\pm$ 9.3	27.0 $\pm$ 4.0
All surveys, at least reporting recent injuries n=2,095	72% men	30.6 $\pm$ 9.5	26.8 $\pm$ 4.3

- Reported survey responses reflect respondents who sufficiently completed the survey, providing at least demographics and recent injuries.
- This allowed 84 additional incomplete survey responses to be captured.
- No discarding of valuable demographic, fitness, and injury details due to incomplete other responses.
- There were no statistically significant differences between respondents who fully completed the survey and those who only partially completed the survey.
- Final reported results including all respondents (n=2,095) reflect the majority of respondents with completed surveys.

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Survey Responses: Demographics Summary

n=2,095 Survey Respondents

	Men (n=1,517)	Women (n=563)
Age (years, mean ± SD)	31 ± 10	30 ± 10
BMI (kg/m ² , mean ± SD)	27 ± 4	26 ± 4

Survey question	Summary of responses
Most common rank category	E1-E4 (47%)
Race distribution	60% white, 28% black, 12% other
Most common MOS categories	Military Police (21%), Medical (21%), Engineers (19%)
Most common civilian occupation categories	Healthcare (13%), Protective Service (10%), Management (7%)
Most common education level	High school or equivalent (47%)
Most common marital status	Single, never married (50%)
Most common living arrangement	With partner/spouse (37%)

Additional details for population demographics and characteristics provided in Supplementary Slides.

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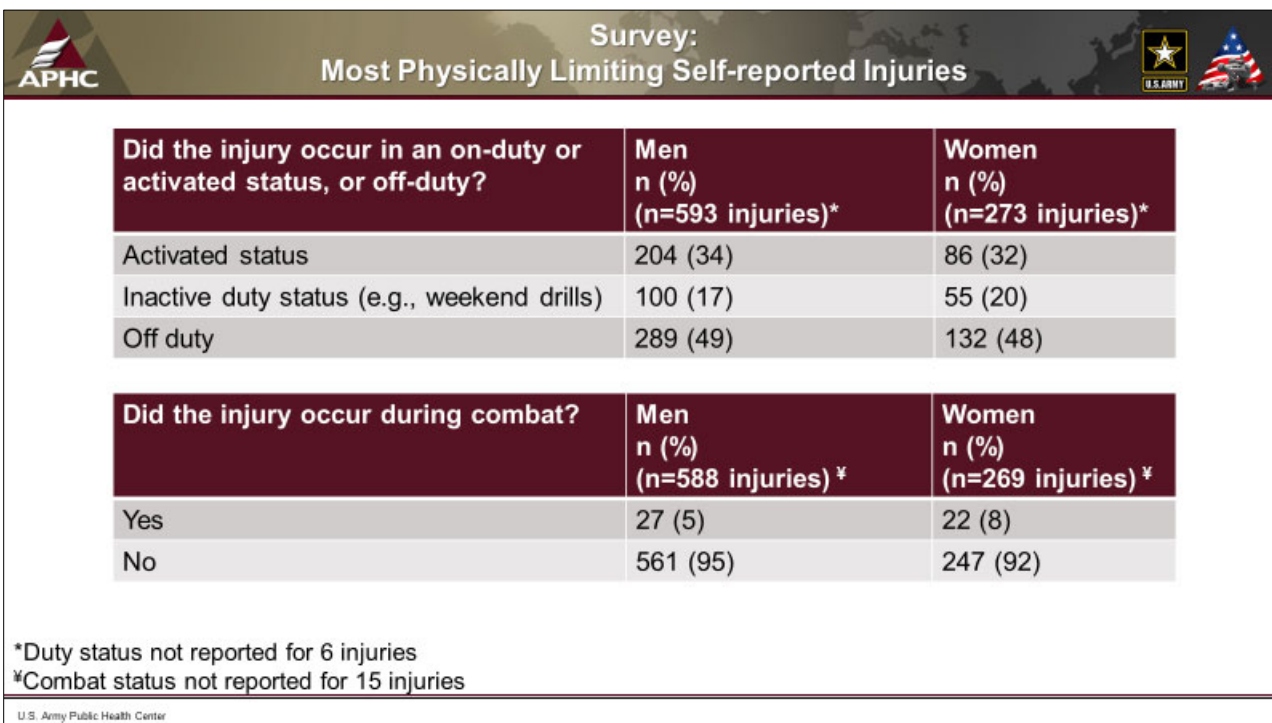
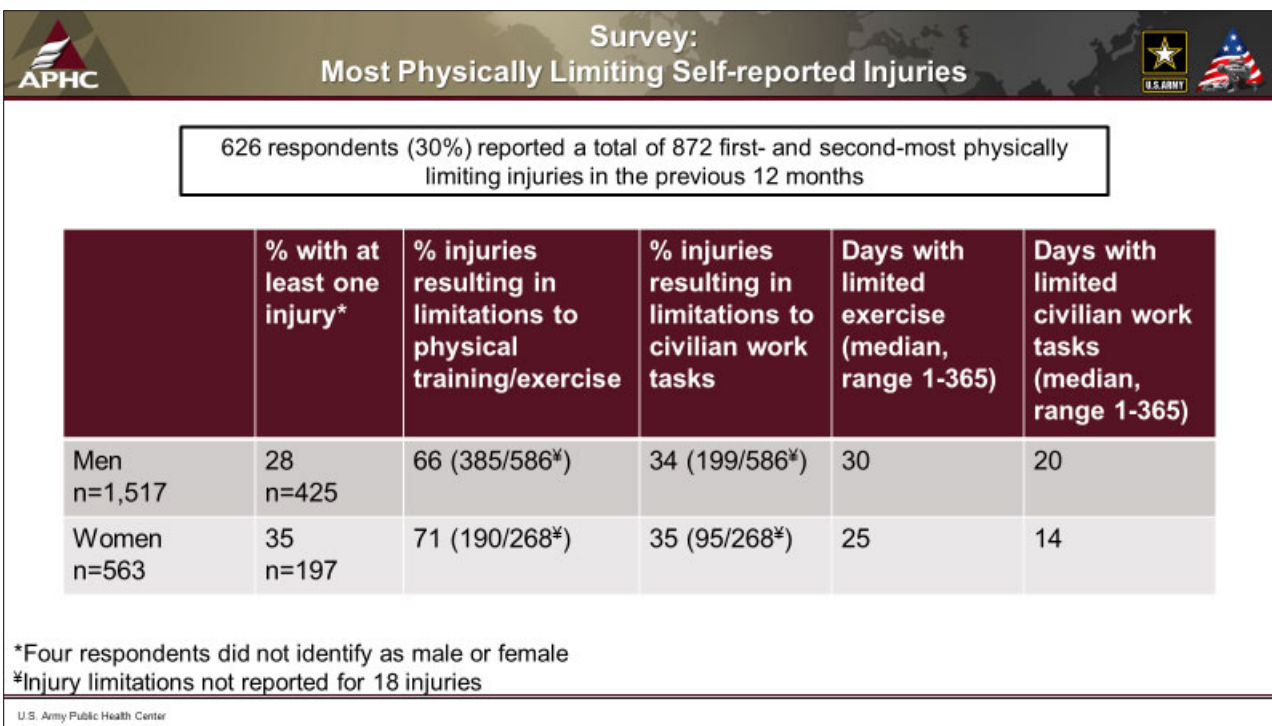


Injuries: Survey and Defense Medical Surveillance System





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Survey: Most Physically Limiting Self-reported Injuries, Seen by a Provider		
	Men (n=586 injuries)* n (%)	Women (n=268 injuries)* n (%)
Injuries seen by a medical provider	320 (55)	160 (60)
Injuries seen by a provider in an MTF	108 (18)	60 (22)
Days between injury and seeing a provider (median, range 0-365)	5	7
Injuries that resulted in a profile <i>From the provider, or from the Army Reserve centralized profile management system</i>	96 (16)	68 (25)
Permanent Profile	23 (4)	12 (4)
Temporary Profile	73 (12)	56 (21)
Temporary Profile Limited Duty Days (median, range 2-365)	30	28
Injuries for which a provider recommended limited physical training	234 (40)	119 (44)
Days with provider-recommended limited PT (median, range 1-365)	30	30

*Provider visit information not reported for 18 injuries

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Survey: Most Physically Limiting Self-reported Injuries Summary of Leading Injury Types, Body Areas, and Activities		
• Leading injury types: – Strained muscle (19%) – Sprained joint (12%) – Pain in body part (11%)	• Leading injured body areas: – Lower back (21%) – Knee (20%) – Shoulder (12%)	• Leading injury activities: – Running (22%) – Weight lifting (18%) – Lifting heavy objects (12%)
Additional details by sex provided in Supplementary Slides		

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USARC Baseline Preliminary Briefing Question and Response



“Can we investigate injured body regions and injury types, stratified by age and BMI?”

- It has repeatedly been shown that the risk of military injuries increases with increasing age, increasing BMI, and decreasing physical fitness (e.g., Jones et al. 2018). This was also true in the surveyed USARC H2F Pilot population, which will be shown later in this briefing.
- However, when looking by specific injury type and specific body region, we did not observe significant trends by age or BMI, for men or women, in the USARC survey data.
- This is an interesting question that we will investigate in other populations.
- See full results in Supplementary Slides.

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Medical Encounters: Taxonomy Distribution of Injuries

USARC H2F Pilot Participants*, 1OCT20-30SEP21

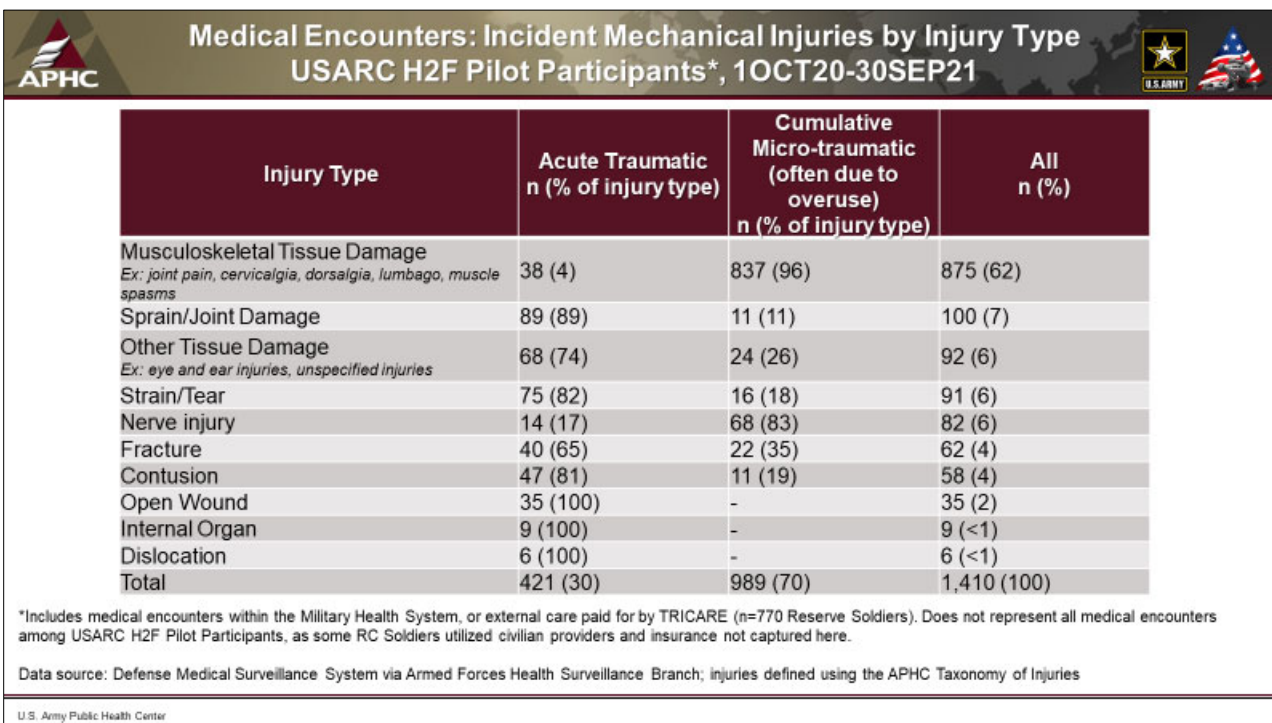
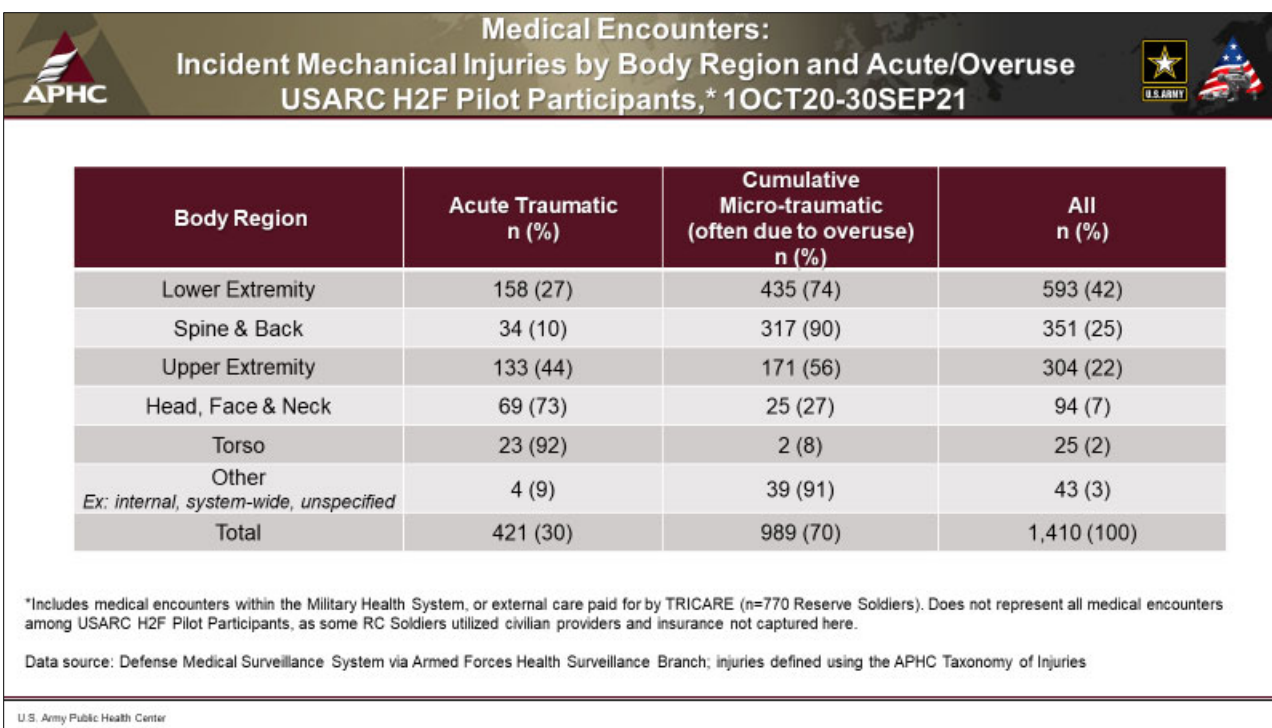


ALL INCIDENT INJURIES, n=1,483

Mechanical Energy Injuries n=1,410 (95%)		Non-Mechanical Energy Injuries n=29 (2%)			Other/Unspecified Injuries n=44 (3%)	
Acute Trauma n=421 (28%) MSK n=248 (17%) Non-MSK n=173 (12%)	Cumulative Microtrauma n=989 (67%) MSK n=886 (60%) Non-MSK n=103 (7%)	Environmental n=6 (<1%) Heat & Sun n=6 (<1%) Cold n=0 Altitude/Pressure n=0 Lightning n=0	Poisons n=20 (1%) Drugs n=2 (<1%) Toxins n=6 (<1%) Chemicals n=12 (1%)	Non-Environmental n=3 (<1%) Thermal burns n=3 (<1%) Electrical n=0 Nuclear radiation n=0	Medical Complications n=21 (1%) Other reaction to external cause n=10 (<1%) Foreign Body n=1 (<1%)	Abuse/ Intentional n=0 Lack of essential element n=0 Medical Accidents n=0 Unspecified/ multiple injuries n=12 (<1%)

*Includes medical encounters within the Military Health System, or external care paid for by TRICARE (n=770 Reserve Soldiers).
 Does not represent all medical encounters among USARC H2F Pilot Participants, as some RC Soldiers utilized civilian providers and insurance not captured here.
 MSK = damage to tissue(s) of the musculoskeletal system i.e., bone, cartilage, muscle, tendon, fascia, joint, ligament, bursa, synovium.
 Data source: Defense Medical Surveillance System via Armed Forces Health Surveillance Branch, injuries defined using the APHC Taxonomy of Injuries

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APFT and ACFT Performance: Survey and Defense Training Management System

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Defense Training Management System (DTMS): APFT Pass/Fail and Average Performance for Men					
APFT Event (Men)	n	Pass n (%)	Average Performance	Fail n (%)	Average Performance
2-Mile Run - Minutes	1,798	1,481 (82)	15.8 ± 1.4	272 (18)	20.6 ± 3.2
Sit-Up - Reps	1,982	1,830 (92)	57 ± 12	150 (8)	37 ± 10
Push-Up - Reps	2,008	1,919 (96)	53 ± 14	86 (4)	30 ± 8
Overall Pass and Fail Rates with Total Calculated APFT Score – Points (Completed tests only)	1,919	1,632 (85)	222 ± 39	287 (15)	149 ± 39
(n)=number of Soldiers with event results					

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 Defense Training Management System (DTMS): APFT Pass/Fail and Average Performance for Women  					
APFT Event (Women)	n	Pass n (%)	Average Performance	Fail n (%)	Average Performance
2-Mile Run - Minutes	627	509 (81)	18.6 ± 1.8	118 (20)	23.1 ± 2.5
Sit-Up - Reps	714	623 (87)	58 ± 11	87 (13)	33 ± 11
Push-Up - Reps	730	710 (97)	30 ± 12	19 (3)	11 ± 5
Overall Pass and Fail Rates with Total Calculated APFT Score – Points (Completed tests only)	679	553 (81)	223 ± 40	126 (20)	150 ± 40
(n)=number of Soldiers with event results					
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 Defense Training Management System (DTMS): ACFT Pass/Fail and Average Performance for Men  					
ACFT Event (Men)	n	Pass n (%)	Average Performance	Fail n (%)	Average Performance
Deadlift - Pounds	2,034	2,022 (>99)	181.4 ± 55.8	1 (<1)	110
Power Throw - Meters	2,024	2,014 (>99)	8.6 ± 1.8	10 (<1)	4.0 ± 0.3
Push-Up - Reps	2,031	2,029 (>99)	23.4 ± 12.4	2 (<1)	1.5 ± 0.7
Sprint Drag Carry - Minutes	2,004	1,962 (98)	2.1 ± 0.3	42 (2)	3.3 ± 0.4
Leg Tuck – Reps	2,079	1,832 (88)	Leg Tuck	247 (12)	Leg Tuck
Plank – Minutes			5.6 ± 5.3 (1770)		0 (217)
			Plank		Plank
			2.3 ± 0.5 (62)		1.5 ± 0.5 (30)
2-Mile Run - Minutes	1,871	1,522 (81)	17.8 ± 2.0	349 (19)	23.7 ± 2.3
Overall Pass and Fail Rates with Total Calculated ACFT Score – Points (Completed tests only)	1,846	1,435 (78)	438 ± 46	411 (22)	342 ± 44
*ACFT Pass and Fail Rates Calculated using ACFT 3.0 Standards					
(n)=number of Soldiers with event results					
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 Defense Training Management System (DTMS): ACFT Pass/Fail and Average Performance for Women  					
ACFT Event (Women)	n	Pass n (%)	Average Performance	Fail n (%)	Average Performance
Deadlift - Pounds	639	692 (99)	150.1 ± 21.7	7 (1)	104.3 ± 25.6
Power Throw - Meters	672	555 (83)	5.8 ± 1.1	117 (17)	3.8 ± 0.6
Push-Up - Reps	663	642 (97)	16.7 ± 8.4	21 (3)	5.2 ± 3.0
Sprint Drag Carry - Minutes	647	483 (75)	2.6 ± 0.3	164 (25)	3.5 ± 0.4
Leg Tuck – Reps	485	159 (33)	Leg Tuck	326 (67)	Leg Tuck
Plank – Minutes			3.2 ± 3.5 (234)		0 (247)
			Plank		Plank
			2.3 ± 0.4 (138)		1.5 ± 0.4 (76)
2-Mile Run - Minutes	564	322 (57)	18.8 ± 1.7	242 (43)	24.2 ± 2.4
Overall Pass and Fail Rates with Total Calculated ACFT Score – Points (Completed tests only)	525	200 (38)	396 ± 29	325 (62)	293 ± 56
*ACFT Pass and Fail Rates Calculated using ACFT 3.0 Standards (n)=number of Soldiers with event results					

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Physical Training

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Survey Respondents: Physical Training		
	Men n=1,517	Women n=563
Reported PT Participation (%)	84% (1266/1517)	80.1% (452/563)
Reported PT Participation between 20-840 minutes per week (%)	69% (1045/1517)	65.4% (368/563)
Run - Miles per week (n)	7 ± 7 (1045)	6 ± 6 (368)
Run - Minutes per week (n)	62 ± 56 (1045)	57 ± 56 (368)
Sprinting - Minutes per week (n)	23 ± 39 (1045)	26 ± 55 (368)
Calisthenics - Minutes per week (n)	30 ± 49 (1045)	27 ± 48 (368)
Cross-Training - Minutes per week (n)	23 ± 45 (1045)	30 ± 55 (368)
Agility Training - Minutes per week (n)	15 ± 30 (1045)	11 ± 23 (368)
High Intensity Interval Training (HIIT) – Minutes per week (n)	30 ± 51 (1045)	37 ± 57 (368)
Other Aerobic - Minutes per week (n)	33 ± 63 (1045)	42 ± 60 (368)
Resistance Training - Minutes per week (n)	79 ± 113 (1045)	64 ± 81 (368)
Foot Marching – Miles per week (n)	4 ± 14 (1045)	4 ± 41 (368)
Total Exercise – Minutes per week (n)	294 ± 205 (1045)	294 ± 196 (368)

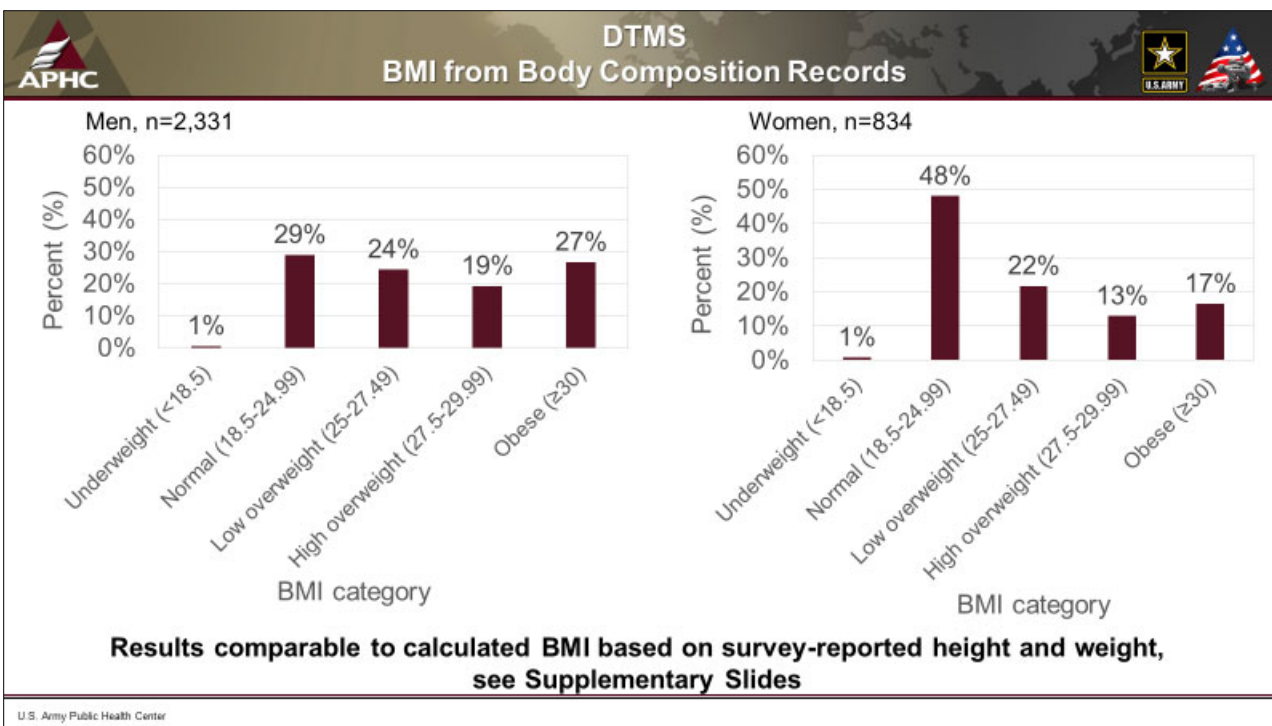
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Body Composition: Defense Training Management System

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DTMS
Body Composition Records

APHC U.S. ARMY

Men n=2,331	n (%)
Met AR 600-9 body composition standards	2,069 (89)
Met weight-for-height standards	1,183 (51)
<i>Met standards based on tape test n=1148 exceeding weight-for-height</i>	886 (77)

Women n=834	n (%)
Met AR 600-9 body composition standards	712 (85)
Met weight-for-height standards	470 (56)
<i>Met standards based on tape test n=365 exceeding weight-for-height</i>	242 (66)

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Health Behaviors, Wellness, and Health Knowledge

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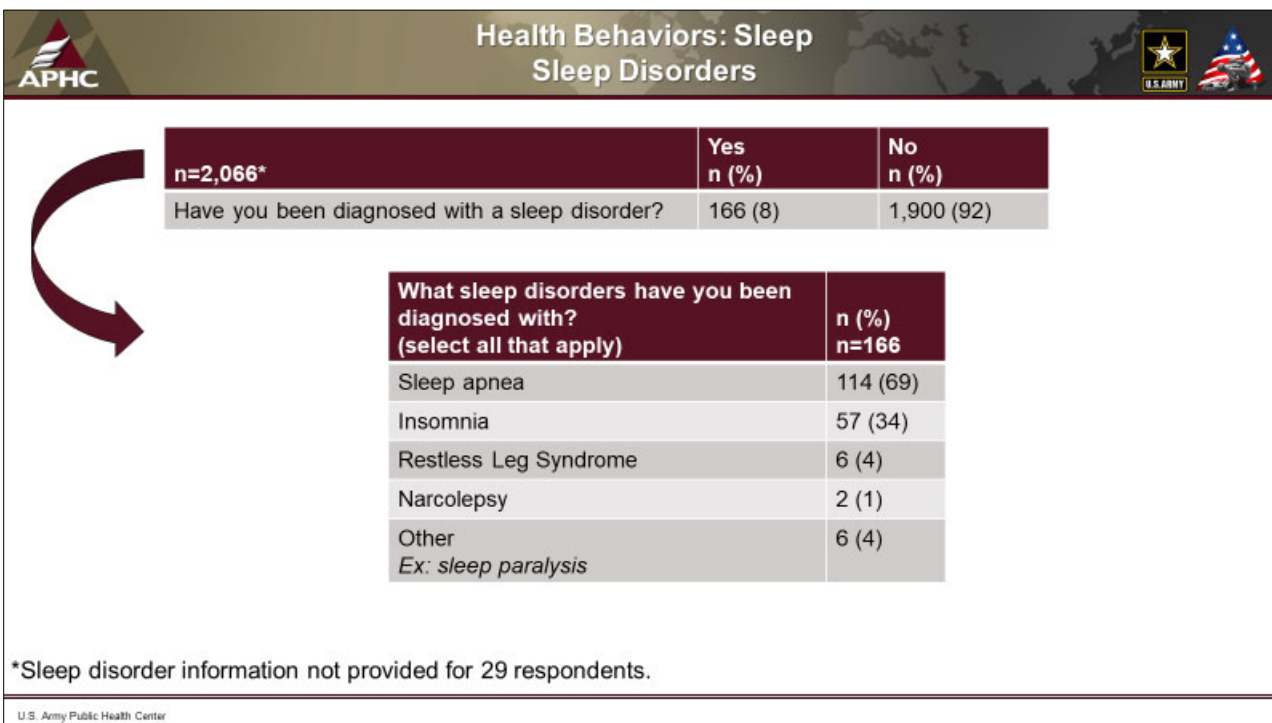
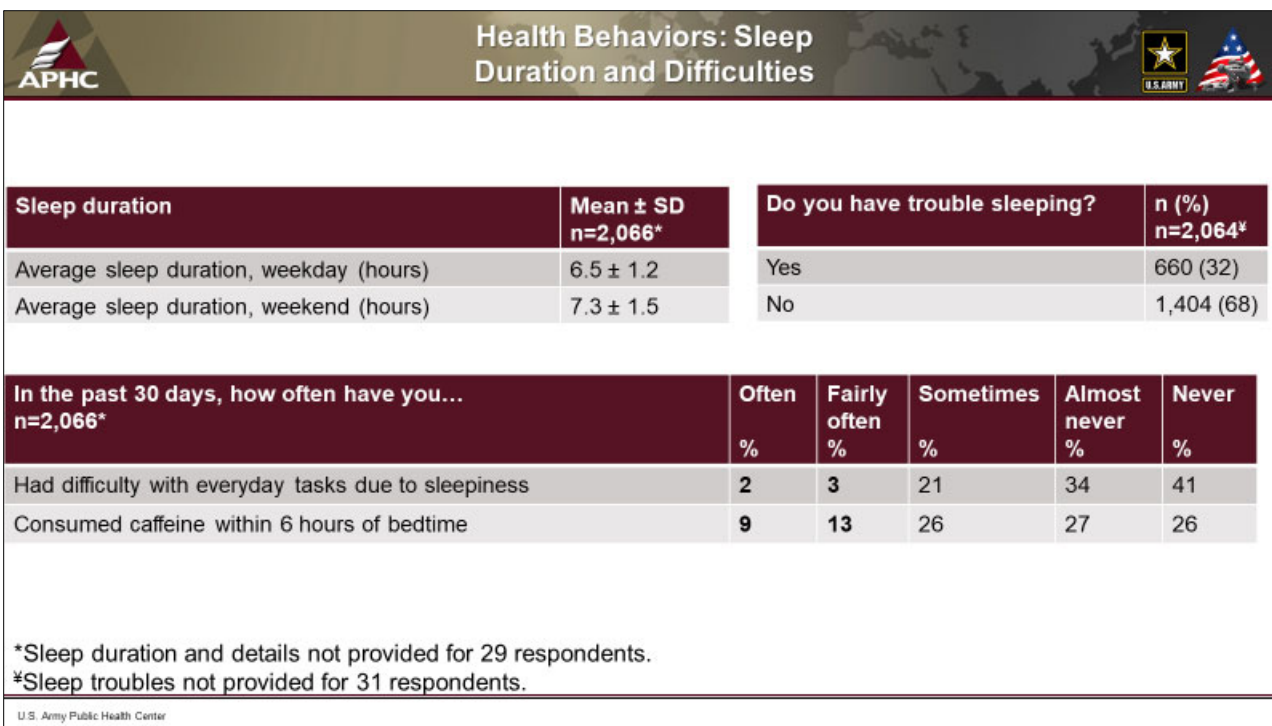


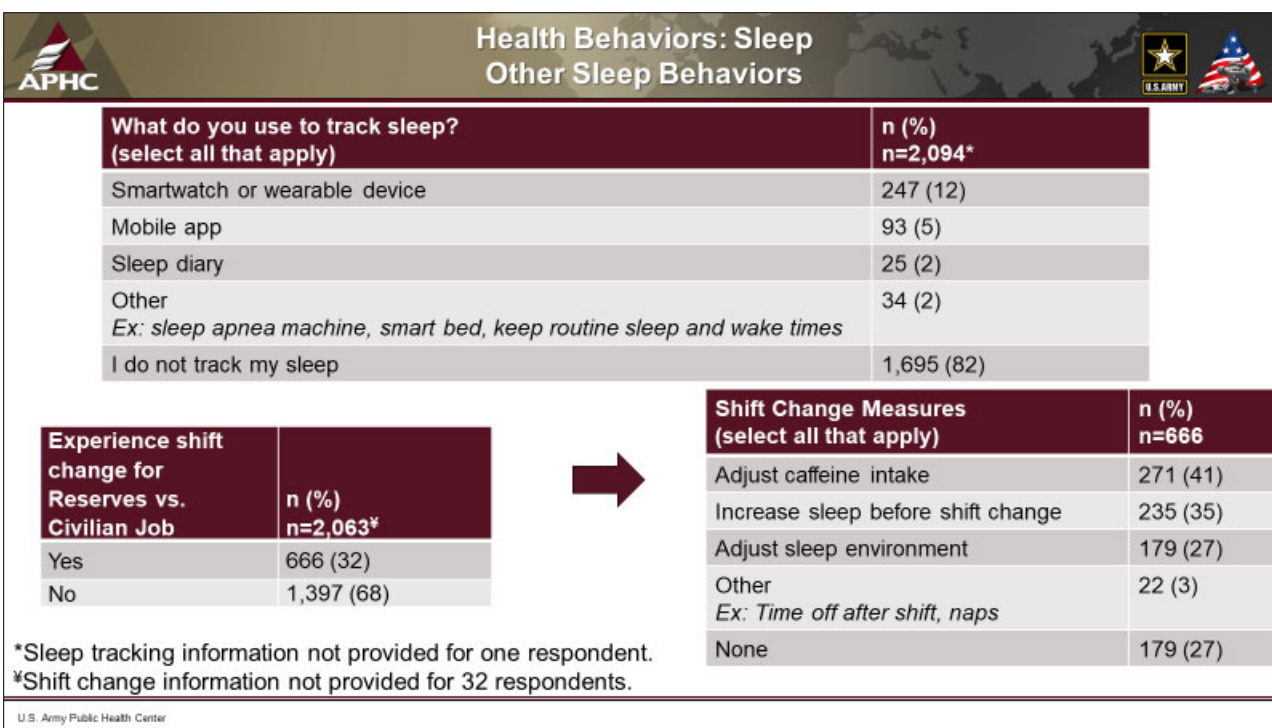
Health Behaviors: Tobacco Use




	Men n=1,517 n (%)	Women n=569 n (%)
Ever smoked cigarettes	304 (20)	38 (5)
Smoked cigarettes in the past 30 days	141 (9)	12 (2)
Ever used smokeless tobacco	256 (17)	14 (3)
Used smokeless tobacco in the past 30 days	161 (11)	7 (1)
Ever used e-cigarettes or personal vaporizers	186 (12)	46 (8)
Used e-cigarettes or personal vaporizers in the past 30 days	125 (8)	37 (2)

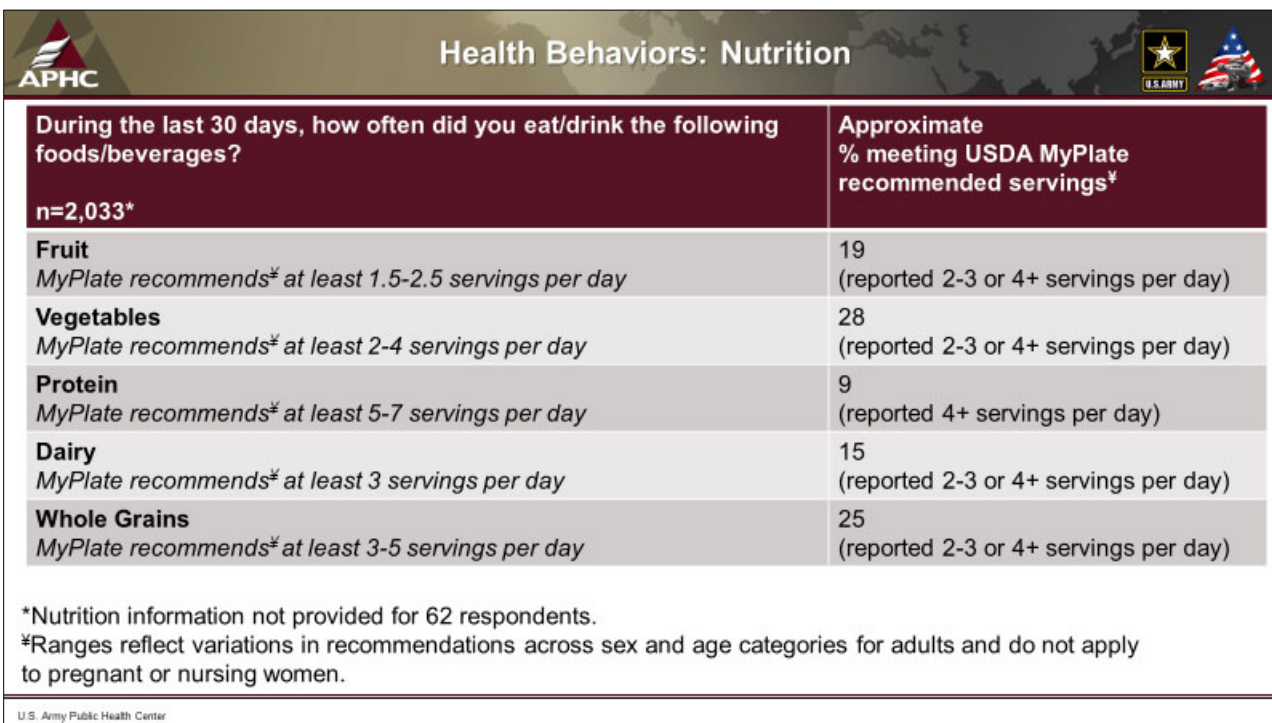
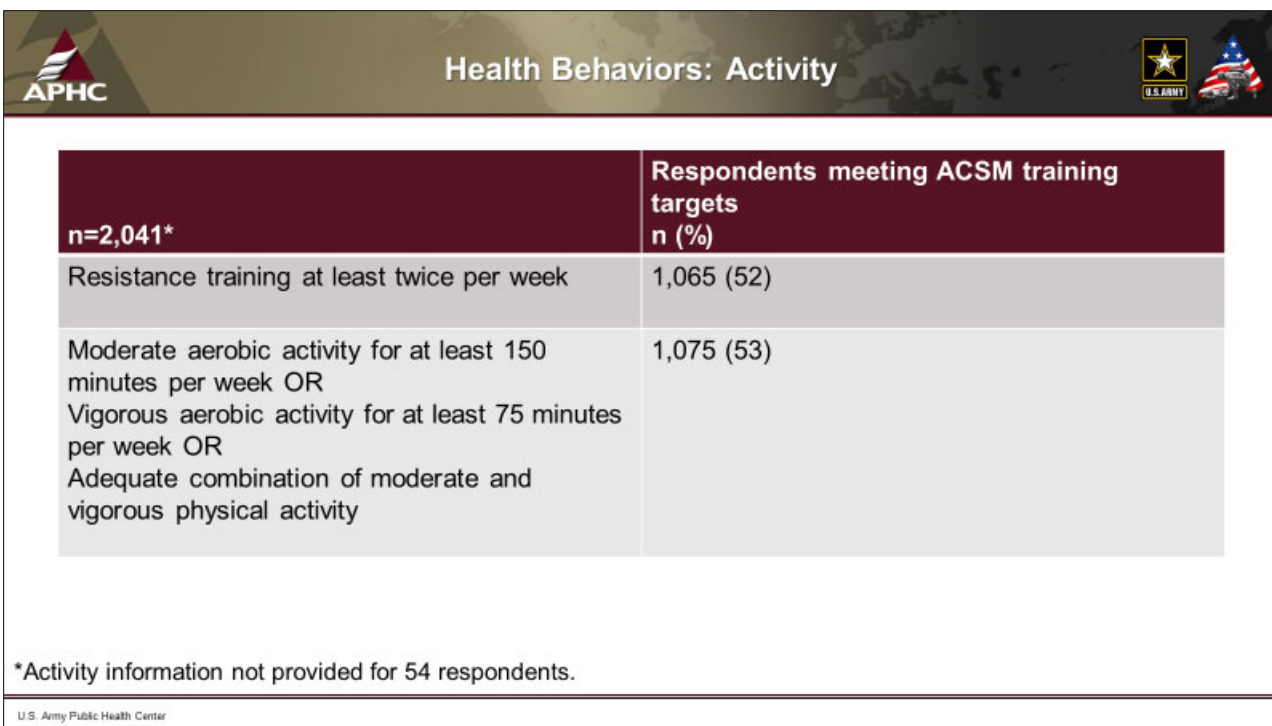
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Health Behaviors: Activity			
Past 30 days	Average number of sessions per week (mean ± SD)	Average minutes per session (mean ± SD)	Average minutes per week (mean ± SD)
<u>Moderate aerobic activity</u> Moderate physical effort, makes you breathe somewhat harder than normal (NOT resistance training). <i>Examples: brisk walking, bicycling (flat, 5-9 mph), swimming (recreational), softball, shooting basketball, and tennis.</i> n=1,240 participants	4 ± 2	41 ± 29	162 ± 147
<u>Vigorous aerobic activity</u> Hard physical effort, makes you breathe much harder than normal (NOT resistance training). <i>Examples: running, agility drills, calisthenics, interval training, sprints, road marches, and bicycling at high effort.</i> n=1,180 participants	4 ± 2	39 ± 26	149 ± 138
<u>Resistance training</u> <i>Weight machines, weightlifting with free weights, dumbbells, kettlebells, and body weight exercises (pull-ups, push-ups, burpees, etc.)</i> n=1,140 participants	4 ± 2	43 ± 28	178 ± 157
*Activity information not provided for 54 respondents.			

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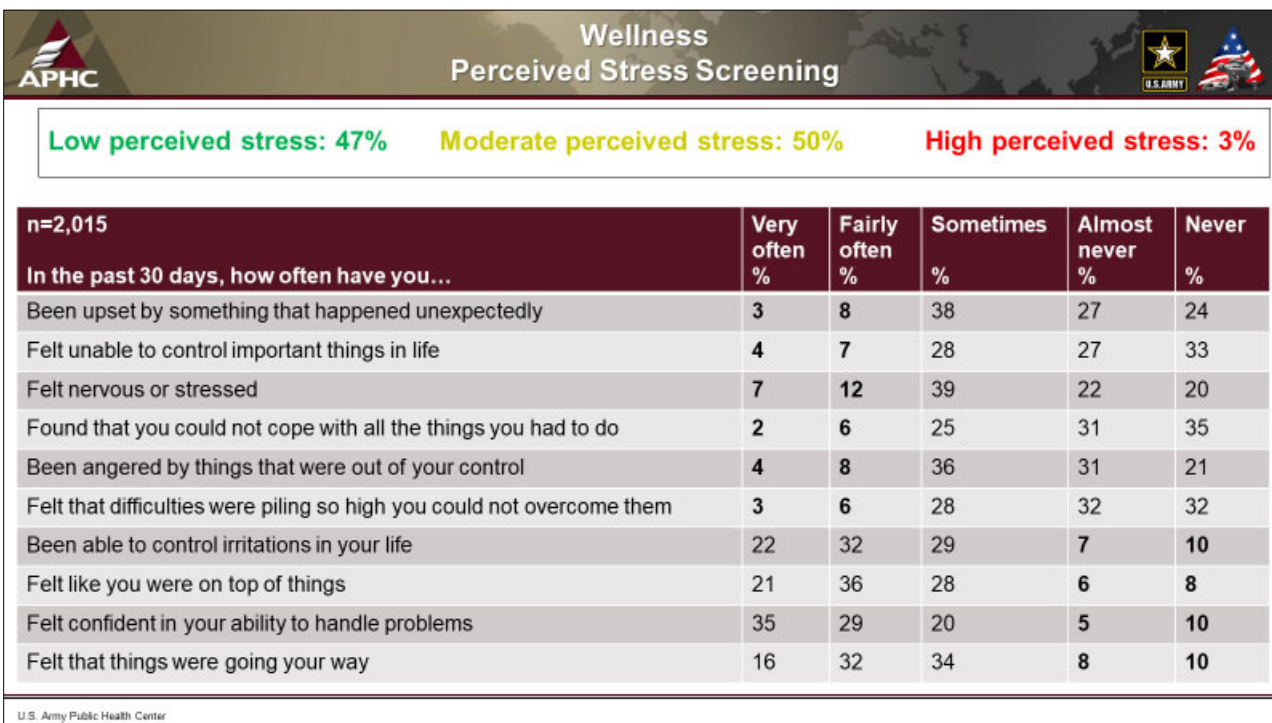
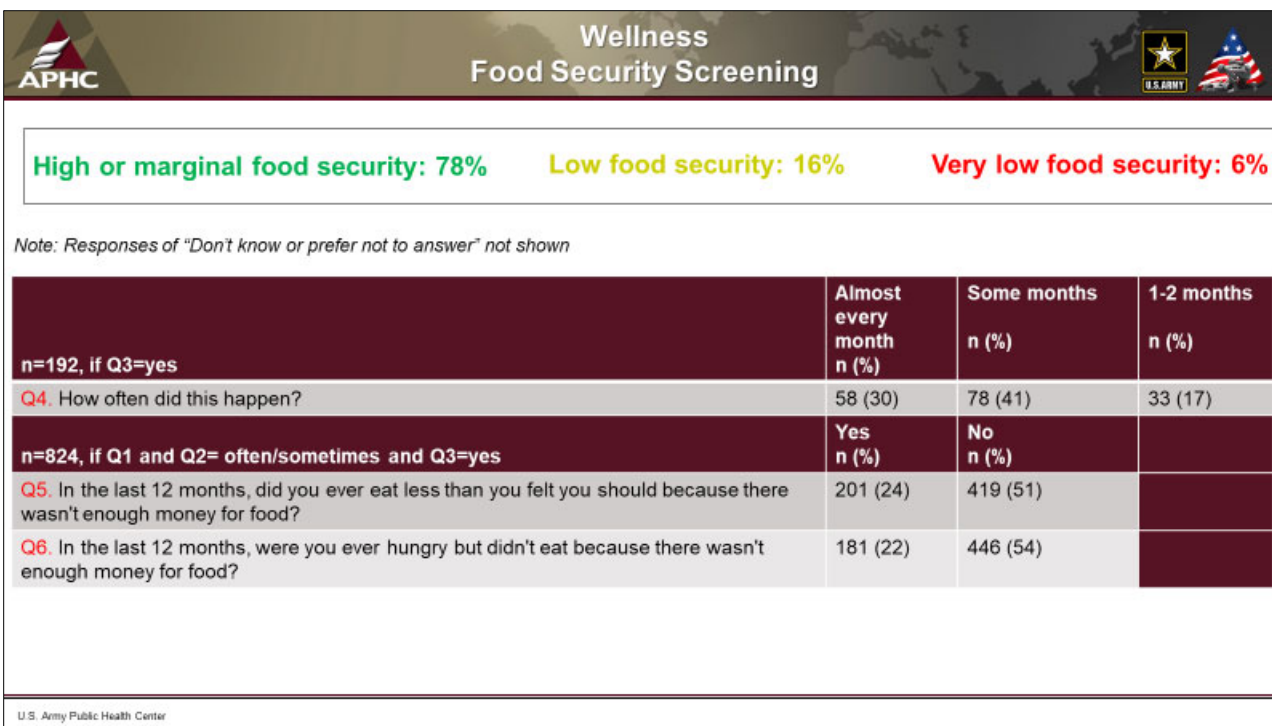
Target Behaviors: Activity and Nutrition					
n=2,021* Do you...	Yes, for more than 6 months	Yes, for less than 6 months	No, but I intend to in the next 30 days	No, but I intend to in the next 6 months	No, and I do not intend to
	%	%	%	%	%
Go caffeine free at least 6 hours before bed	45	16	8	7	25
Get at least 10,000 steps per day	51	19	14	9	8
Refuel 30-60 minutes after a workout	43	25	15	8	10
Get at least 150 minutes of moderate aerobic exercise per week	30	23	22	14	11
Get at least 75 minutes of vigorous aerobic exercise per week	28	23	21	15	12
Get at least 8 servings of fruit and vegetables per day	23	15	28	15	23

*Target health behavior information not provided for 74 respondents.

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Wellness Food Security Screening			
High or marginal food security: 78% Low food security: 16% Very low food security: 6%			
Note: Responses of "Don't know or prefer not to answer" not shown			
n=2,033	Often true n (%)	Sometimes true n (%)	Never true n (%)
Q1. The food that we bought just didn't last, and we didn't have money to get more.	92 (5)	378 (19)	1,378 (68)
Q2. We couldn't afford to eat balanced meals	122 (6)	378 (19)	1,353 (67)
	Yes n (%)	No n (%)	
Q3. In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?	192 (9)	1,614 (79)	

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Factors Associated with H2F Outcomes:

Injury Resulting in Limited Physical Training
Obesity
Passing ACFT

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Multivariable Logistic Regression Results Summary:

Factors Associated with an Injury Resulting in Limited PT




<u>Among men (n=1,517), independent factors significantly associated with a PT-limiting injury were:</u> • Age ≥ 35 ($p < 0.01$) • High overweight or obese BMI (≥ 27.5, $p < 0.01$) • ≤ 5 hours of sleep per night on weekdays ($p < 0.01$) • No weekly sprint training ($p = 0.03$) • Moderate weekly exercise minutes for PT (156-360 minutes, $p < 0.01$) <i>Variables entered into final logistic regression model:</i> Age BMI Lifetime tobacco use Race and ethnicity Civilian occupational physical demands Weekday sleep hours Total weekly physical fitness time Weekly physical fitness time – sprint training Weekly physical fitness time – resistance training ACFT 2-mile run performance (aerobic fitness) ACFT Standing Power Throw performance Detailed results of this model presented on slides 43-46	<u>Among women (n=563), independent factors significantly associated with PT-limiting injury were:</u> • Age ≥ 35 ($p = 0.01$) • Obese BMI (≥ 30, $p = 0.02$) • Moderate or high perceived stress ($p = 0.02$) <i>Variables entered into final logistic regression model:</i> Age BMI Lifetime tobacco use Race and ethnicity MOS category Perceived stress score ACFT 2-mile run performance (aerobic fitness) Detailed results of this model presented on slides 47-49
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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Men  				
Men n=1,517		n (% injured)	OR (95% CI)	P-value
Age	17-24	492 (13)	Ref	-
	25-34	562 (17)	1.17 (0.81-1.69)	0.40
	35-44	290 (27)	1.76 (1.16-2.67)	<0.01
	≥45	173 (29)	2.15 (1.34-3.46)	<0.01
BMI	≤24.9	462 (12)	Ref	-
	25.0-27.49	400 (18)	1.27 (0.85-1.90)	0.35
	≥27.5	655 (25)	1.70 (1.17-2.49)	<0.01
Ever used tobacco products	Yes	511 (22)	1.25 (0.93-1.67)	0.14
	No	1,006 (18)	Ref	

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Men  				
Men n=1,517		n (% injured)	OR (95% CI)	P-value
Race	White	988 (18)	Ref	-
	Black or African American	348 (21)	1.16 (0.82-1.64)	0.40
	Asian	54 (20)	1.14 (0.54-2.40)	0.73
	Multi-racial	65 (26)	1.73 (0.93-3.22)	0.08
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander)	62 (19)	0.85 (0.42-1.72)	0.66
Hispanic ethnicity	Hispanic	256 (18)	1.16 (0.79-1.70)	0.46
	Non-Hispanic	1261 (19)	Ref	-
Civilian Occupational Physical Demands	Light	502 (23)	1.45 (0.96-2.17)	0.08
	Moderate	738 (17)	1.10 (0.74-1.64)	0.63
	Heavy	277 (16)	Ref	-

Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Men  				
Men n=1,517		n (% injured)	OR (95% CI)	P-value
Weekday average sleep hours	≤5	260 (27)	2.23 (1.44-3.47)	<0.01
	6	363 (21)	1.36 (0.89-2.08)	0.15
	7	437 (18)	1.34 (0.88-2.02)	0.17
	≥8	356 (13)	Ref	-
	No response	101 (16)	-	-
Total weekly exercise	None or <20 minutes	472 (16)	0.83 (0.55-1.26)	0.38
	20-156 minutes	349 (16)	Ref	-
	157-360 minutes	351 (25)	1.87 (1.22-2.87)	<0.01
	≥360 minutes	345 (19)	1.19 (0.73-1.96)	0.49
Weekly minutes of sprint training	None or <5 minutes	874 (20)	1.94 (1.05-3.60)	0.03
	5-25 minutes	228 (14)	1.09 (0.54-2.22)	0.80
	26-60 minutes	299 (20)	1.77 (0.92-3.39)	0.09
	≥ 61 minutes	116 (13)	Ref	-

Pink: statistically significant ($p \leq 0.05$); Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Men  				
Men n=1,517		n (% injured)	OR (95% CI)	P-value
Weekly minutes of resistance training	None or <5 minutes	746 (18)	Ref	-
	5-60 minutes	336 (17)	0.76 (0.51-1.14)	0.19
	61-180 minutes	238 (21)	1.07 (0.68-1.68)	0.78
	≥181 minutes	197 (24)	1.58 (1.00-2.50)	0.05
ACFT 2-Mile Run time	<17.4 minutes	395 (14)	Ref	-
	17.4-19.8 minutes	395 (16)	1.03 (0.68-1.55)	0.90
	≥19.9 minutes	394 (17)	1.03 (0.67-1.56)	0.31
	No record	333 (30)	-	-
ACFT Standing Power Throw performance	≤7.7 meters	438 (13)	Ref	-
	7.8-9.2 meters	434 (18)	1.44 (0.98-2.12)	0.07
	≥9.3 meters	413 (18)	1.28 (0.85-1.92)	0.23
	No record	232 (34)	-	-

Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Women  				
Women N=563		n (% injured)	OR (95% CI)	P-value
Age	17-24	210 (20)	Ref	-
	25-34	216 (23)	1.12 (0.68-1.84)	0.65
	≥35	137 (37)	2.01 (1.18-3.43)	0.01
BMI	≤24.9	272 (20)	Ref	-
	25.0-27.49	138 (25)	1.21 (0.72-2.04)	0.48
	27.5-29.99	61 (30)	1.53 (0.77-3.03)	0.22
	≥30	92 (37)	1.95 (1.09-3.47)	0.02
Ever used tobacco products	Yes	89 (22)	0.77 (0.43-1.38)	0.38
	No	474 (26)	Ref	

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Women  				
Women n=563		% injured	OR (95% CI)	P-value
Race	White	256 (26)	Ref	-
	Black or African American	241 (25)	0.83 (0.51-1.36)	0.45
	Asian	13 (23)	0.76 (0.19-3.05)	0.70
	Multi-racial	26 (31)	0.87 (0.34-2.24)	0.78
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander)	27 (15)	0.51 (0.16-1.59)	0.24
Hispanic ethnicity	Hispanic	125 (23)	0.92 (0.54-1.57)	0.76
	Non-Hispanic	438 (26)	Ref	-
MOS category	Engineer	55 (35)	1.86 (0.89-3.88)	0.10
	Medical	166 (31)	1.47 (0.82-2.64)	0.20
	Military Police	97 (18)	0.86 (0.42-1.79)	0.69
	Supply & Logistics	125 (21)	0.75 (0.40-1.42)	0.38
	Other	120 (23)	Ref	

Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with an Injury Resulting in Limited PT - Women  				
Women n=563		n (% injured)	OR (95% CI)	P-value
Perceived stress	Low	234 (21)	Ref	
	Moderate or High	305 (28)	1.67 (1.08-2.58)	0.02
	No response	24 (29)	-	-
ACFT 2-Mile Run time	<20.8 minutes	177 (19)	Ref	-
	≥20.8 minutes	177 (21)	0.99 (0.57-1.72)	0.97
	No record	209 (33)	-	-

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results Summary: Factors Associated with Obesity  	
<u>Among men (n=1,420), independent factors significantly associated with obesity were:</u> • Age ≥ 25 ($p < 0.01$) • Hispanic ethnicity ($p < 0.01$) • Ever used tobacco products ($p < 0.01$) • Low performance on ACFT 2MR (≥ 17.4 min, $p < 0.01$) • High performance on ACFT SPT (≥ 7.7 m, $p < 0.01-0.02$) <u>Variables entered into final logistic regression model:</u> Age Race and ethnicity Lifetime tobacco use ACFT 2-mile run performance (aerobic fitness) ACFT Standing Power Throw performance Detailed results of this model presented on slides 51-52	<u>Among women (n=504), independent factors significantly associated with obesity were:</u> • Age ≥ 25 ($p < 0.01$) • Low performance on ACFT 2MR (≥ 20.7 min, $p < 0.01$) <u>Variables entered into final logistic regression model:</u> Age Race and ethnicity Weekly physical training time - running ACFT 2-mile run performance (aerobic fitness) ACFT plank performance Detailed results of this model presented on slides 53-54

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Men n=1,420		n (% obese)	OR (95% CI)	P-value
Age at body comp record	17-24	492 (16)	Ref	
	25-34	512 (29)	2.11 (1.52-2.94)	<0.01
	35-44	262 (34)	2.38 (1.62-3.50)	<0.01
	≥45	154 (38)	2.90 (1.85-4.54)	<0.01
Race	White	927 (24)	Ref	
	Black or African American	325 (33)	1.30 (0.95-1.79)	0.11
	Asian	47 (28)	1.33 (0.64-2.76)	0.45
	Multi-racial	62 (26)	1.19 (0.62-2.28)	0.61
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander)	59 (34)	1.30 (0.71-2.40)	0.39
Hispanic ethnicity	Hispanic	243 (28)	1.66 (1.16-2.37)	<0.01
	Non-Hispanic	1177 (26)	Ref	

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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Men n=1,420		n (% obese)	OR (95% CI)	P-value
Ever used tobacco products	Yes	470 (31)	1.41 (1.07-1.86)	0.01
	No	950 (24)	Ref	
ACFT 2-mile run performance	≤17.4 minutes	386 (10)	Ref	
	17.4-19.8 minutes	385 (19)	2.13 (1.39-3.26)	<0.01
	≥19.9 minutes	381 (42)	6.92 (4.62-10.38)	<0.01
	No record	268 (38)	-	-
ACFT Standing Power Throw performance	≤7.6 meters	425 (19)	Ref	
	7.7-9.2 meters	422 (24)	1.54 (1.08-2.21)	0.02
	≥9.3 meters	403 (36)	3.21 (2.24-4.60)	<0.01
	No record	170 (29)	-	-

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with Obesity - Women  				
Women n=504		n (% obese)	OR (95% CI)	P-value
Age at body comp record	17-24	197 (11)	Ref	
	25-34	189 (20)	2.43 (1.32-4.46)	<0.01
	≥35	118 (26)	2.77 (1.44-5.34)	<0.01
Race	White	232 (14)	Ref	
	Black or African American	215 (21)	1.11 (0.64-1.95)	0.71
	Asian	11 (9)	0.44 (0.05-4.07)	0.47
	Multi-racial	21 (24)	1.44 (0.46-4.56)	0.54
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander)	25 (24)	2.07 (0.68-6.28)	0.20
Hispanic ethnicity	Hispanic	112 (14)	0.79 (0.38-1.56)	0.47
	Non-Hispanic	392 (19)	Ref	

Pink: statistically significant ($p \leq 0.05$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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 Multivariable Logistic Regression Results: Factors Associated with Obesity - Women  				
Women n=504		n (% obese)	OR (95% CI)	P-value
Total weekly running minutes	None or <5 minutes	205 (26)	1.89 (0.98-3.65)	0.06
	5-60 minutes	162 (12)	0.85 (0.41-1.78)	0.67
	≥ 60 minutes	137 (3)	Ref	
ACFT 2-mile run performance	<20.7 minutes	164 (6)	Ref	
	≥20.7 minutes	169 (22)	3.66 (1.69-7.92)	<0.01
	No record	171 (25)	-	-
ACFT plank performance	≤2.2 minutes	112 (29)	2.17 (0.77-6.10)	0.14
	>2.2 minutes	42 (14)	Ref	
	No record	350 (15)	-	-

Pink: statistically significant ($p \leq 0.05$); Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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**Multivariable Logistic Regression Results Summary:
Factors Associated with Passing ACFT**




Among men (n=1,168), independent factors significantly associated with passing ACFT were:

- BMI under 30 (p<0.01)
- Military Police MOS (p=0.02)
- More than 20 minutes of weekly exercise for PT (p<0.01-0.01)
- Regularly achieving at least 75 minutes of vigorous aerobic exercise per week (p=0.04)

Variables entered into final logistic regression model:
 Age
 BMI
 MOS category
 Race and ethnicity
 Total weekly physical fitness time
 Weekly physical fitness time – HIIT training
 Target health behavior – 75 min vigorous aerobic activity weekly
Detailed results of this model presented on slides 56-58

Among women (n=332), independent factors significantly associated with passing ACFT were:

- BMI under 27.5 (p<0.01)
- Medium or heavy occupational physical demands (p<0.01-0.05)
- Any weekly HIIT training for PT (p<0.01-0.05)

Variables entered into final logistic regression model:
 Age
 BMI
 Civilian occupational physical demands
 Race and ethnicity
 Weekly physical fitness time – HIIT training
Detailed results of this model presented on slides 59-60

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 Multivariable Logistic Regression Results: Factors Associated with Passing ACFT - Men  				
Men n=1,168		n (% pass)	OR (95% CI)	P-value
Age at ACFT test	17-24	443 (79)	0.96 (0.64-1.42)	0.97
	25-34	440 (80)	1.30 (0.89-1.90)	0.17
	≥35	285 (72)	Ref	
BMI in DTMS body comp record	<25	360 (89)	7.63 (4.92-11.83)	<0.01
	25.0-27.49	290 (86)	5.36 (3.49-8.22)	<0.01
	27.5-29.99	216 (76)	2.56 (1.70-3.86)	<0.01
	≥30	270 (55)	Ref	
	No record	32 (67)	-	-
MOS category	Engineer	277 (79)	1.22 (0.80-1.86)	0.35
	Medical	159 (78)	0.97 (0.59-1.58)	0.89
	Military Police	296 (82)	1.69 (1.11-2.59)	0.02
	Supply & Logistics	129 (72)	0.83 (0.50-1.39)	0.48
	Other	307 (73)	Ref	

Pink: statistically significant (p≤0.05)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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Men n=1,168		n (% pass)	OR (95% CI)	P-value
Race	White	788 (79)	Ref	-
	Black or African American	244 (74)	1.04 (0.71-1.52)	0.84
	Asian	39 (77)	0.94 (0.41-2.16)	0.89
	Multi-racial	50 (78)	0.97 (0.46-2.05)	0.94
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander)	47 (77)	1.12 (0.52-2.41)	0.78
Hispanic ethnicity	Hispanic	212 (79)	1.14 (0.75-1.72)	0.55
	Non-Hispanic	956 (77)	Ref	-
Total weekly minutes of exercise for physical training	None or <20 minutes	347 (72)	Ref	-
	20-250 minutes	413 (77)	1.64 (1.12-2.39)	0.01
	≥250 minutes	408 (83)	1.83 (1.21-2.77)	<0.01

Pink: statistically significant ($p \leq 0.05$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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Men n=1,168		n (% pass)	OR (95% CI)	P-value
Weekly minutes of HIIT training	None or <5 minutes	658 (74)	Ref	
	5-45 minutes	275 (80)	1.04 (0.69-1.55)	0.86
	≥45 minutes	235 (84)	1.54 (0.98-2.42)	0.06
Regularly achieving at least 75 minutes of vigorous aerobic exercise per week (target health behavior)	Yes	628 (81)	1.38 (1.00-1.91)	0.05
	No	502 (72)	Ref	
	No response	38 (87)	-	-

Pink: statistically significant ($p \leq 0.05$); Yellow: marginally significant ($0.051 \leq p \leq 0.10$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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Women n=332		n (% pass)	OR (95% CI)	P-value
Age at ACFT test	17-24	147 (39)	1.03 (0.59-1.80)	0.92
	25-34	126 (40)	0.60 (0.29-1.27)	0.18
	≥35	59 (29)	Ref	
BMI in DTMS body comp record	<25	165 (47)	6.85 (3.12-15.04)	<0.01
	25.0-27.49	74 (39)	4.64 (1.96-11.02)	<0.01
	≥30	72 (14)	Ref	
	No record	21 (38)	-	-
Civilian Occupational physical demands	Light	132 (29)	Ref	
	Medium	164 (42)	2.06 (1.20-3.55)	<0.01
	Heavy	36 (47)	2.65 (1.13-6.23)	0.05

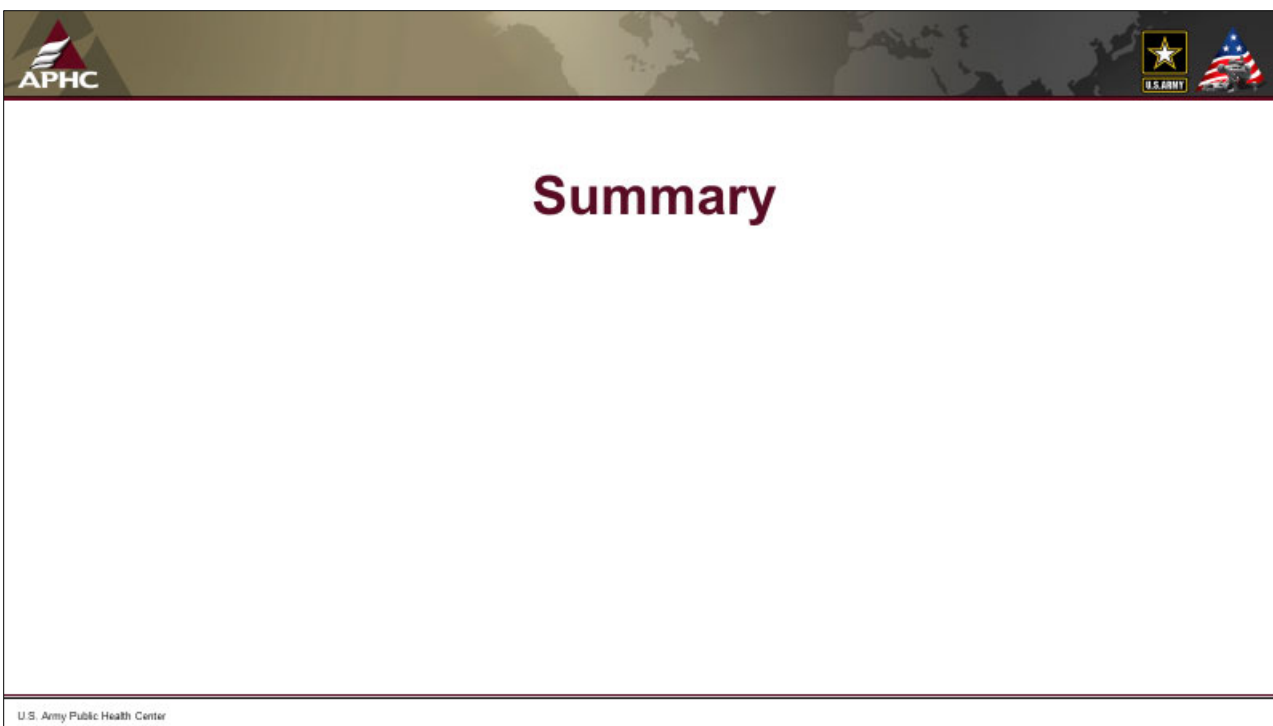
Pink: statistically significant ($p \leq 0.05$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

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Women n=332		n (% pass)	OR (95% CI)	P-value
Race	White	160 (43)	Ref	
	Black or African American	133 (31)	0.73 (0.42-1.27)	0.27
	Asian	7 (0)	-	-
	Multi-racial	12 (33)	0.94 (0.25-3.59)	0.93
	Other (includes American Indian, Alaskan Native, Hawaiian, Pacific Islander, other)	20 (55)	3.48 (1.08-11.25)	0.04
Hispanic ethnicity	Hispanic	82 (38)	0.84 (0.45-1.56)	0.58
	Non-Hispanic	250 (37)	Ref	
Weekly minutes of HIIT training	None, or <5 minutes	162 (28)	Ref	
	5-60 minutes	101 (39)	1.80 (1.01-3.22)	0.05
	≥61 minutes	69 (58)	4.07 (2.10-7.90)	<0.01

Pink: statistically significant ($p \leq 0.05$)
 OR = Odds Ratio; CI = Confidence Interval; Ref = variable reference category

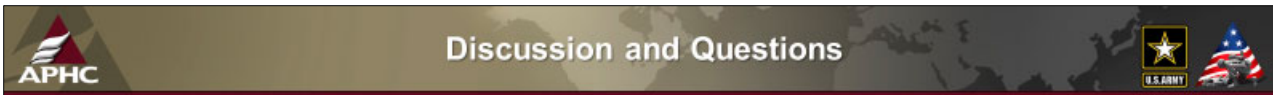
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Summary

- **2,095 Reserve Soldiers** responded to the USARC H2F Pilot Baseline survey, July-December 2021.
- **30% of respondents** provided details about at least one physically limiting injury in the 12 months prior to survey administration. Musculoskeletal injuries to the lower extremities and back represented the majority of reported injuries, often resulting from physical training.
 - **1,483 medical encounters** from a subset of Pilot participants showed a similar injury distribution, with a majority of injuries being cumulative musculoskeletal in nature (60%).
- **82% of respondents** reported participating in physical training for fitness. The average time per week spent doing various activities is summarized.
- Respondents provided information about their health behaviors (e.g., tobacco use, sleep behaviors, activity, and nutrition) and wellness (e.g., stress), which may be associated with injury risk and obesity.
- ACFT and APFT records from the Defense Training Management System were summarized: **22% of men** and **62% of women** with complete ACFT records failed a recent test, based on ACFT 3.0 standards.
- Multivariable logistic regression identified factors significantly associated with having a recent exercise-limiting injury, obesity, and passing the ACFT. Results varied, but age, BMI, and fitness were associated with all three.



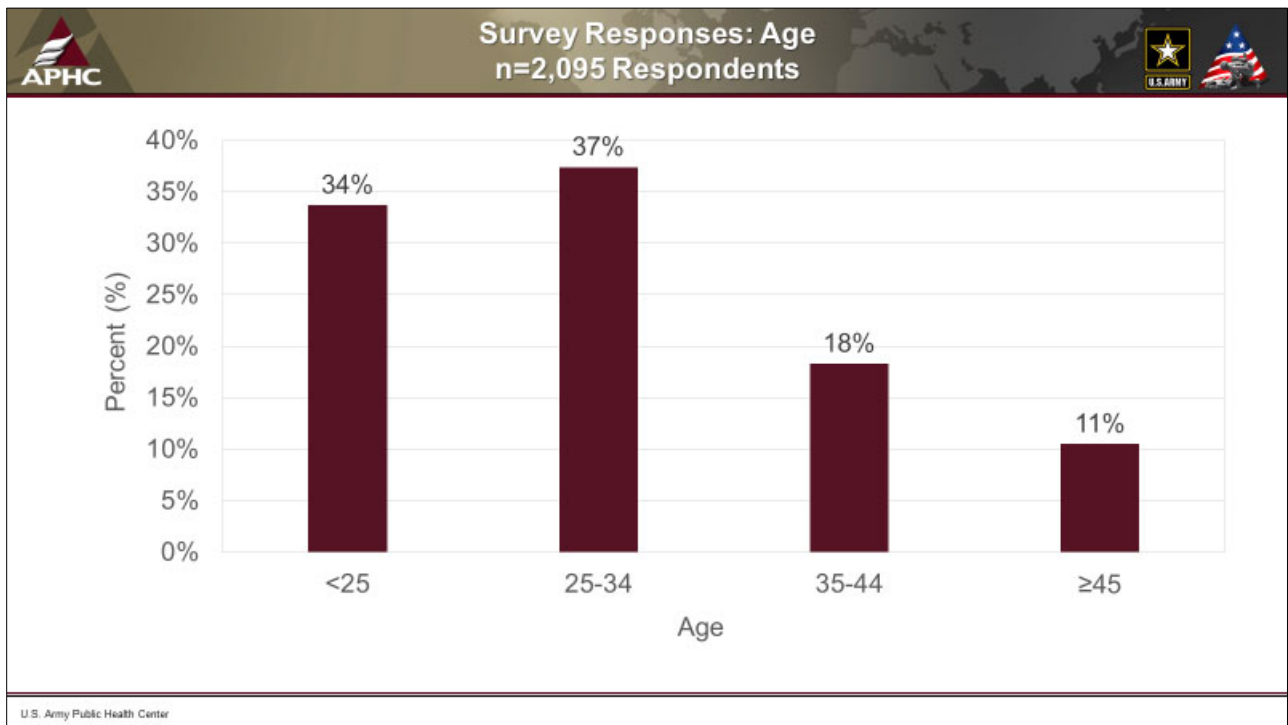
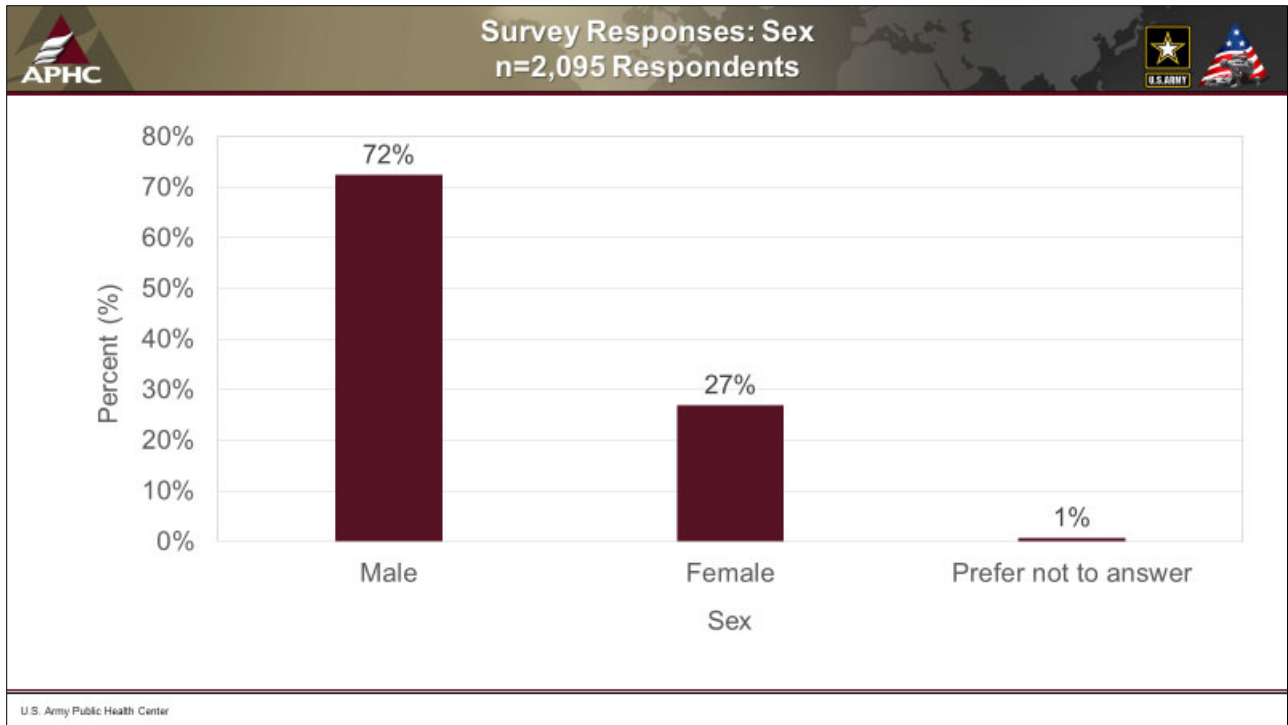
Discussion and Questions

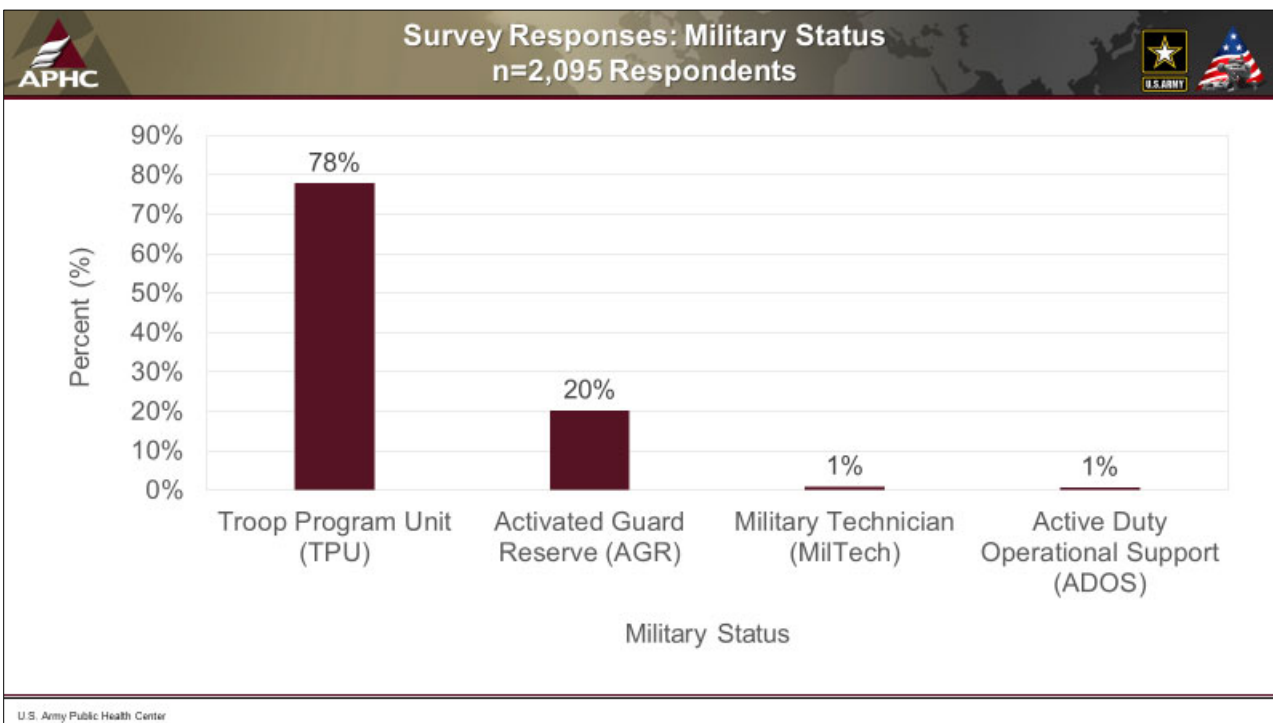
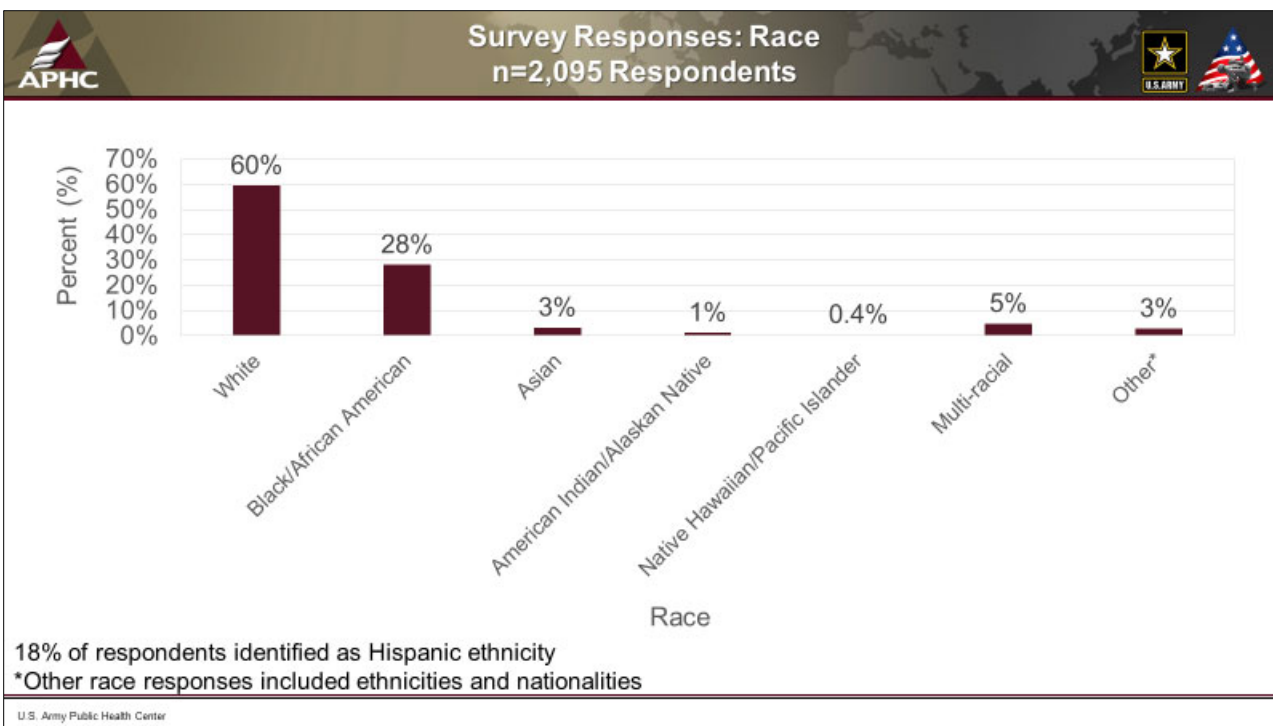
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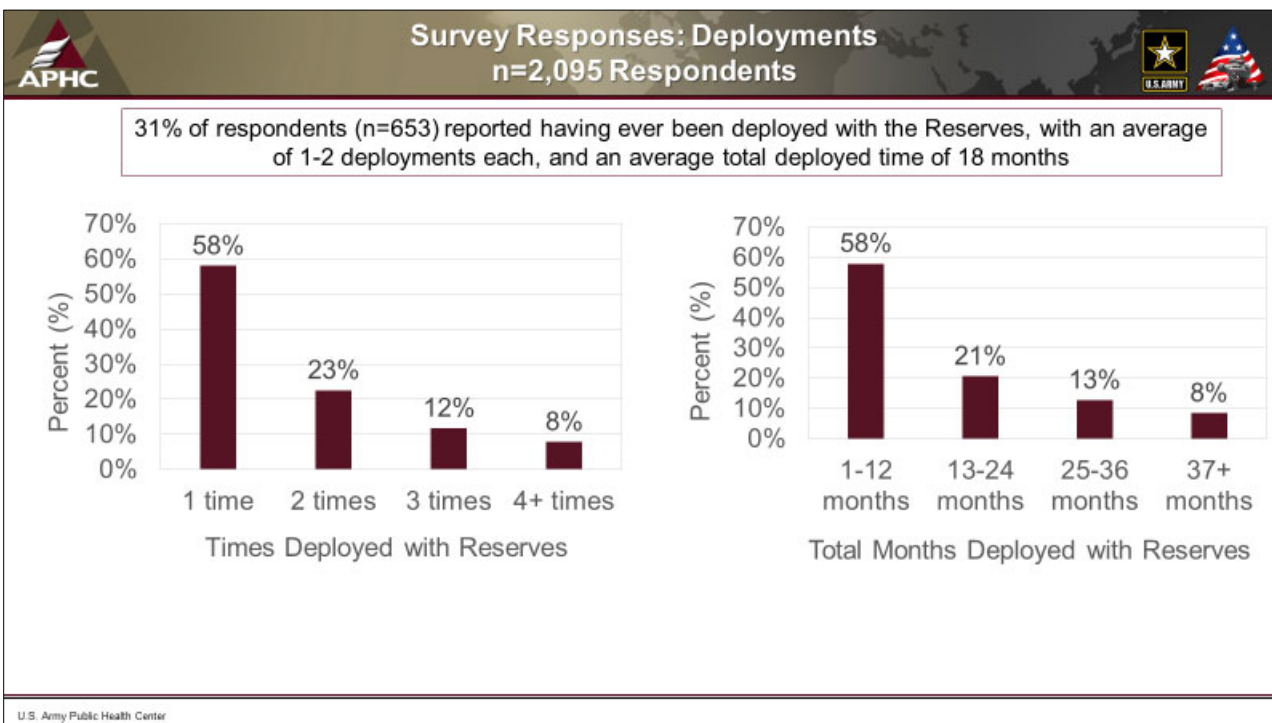
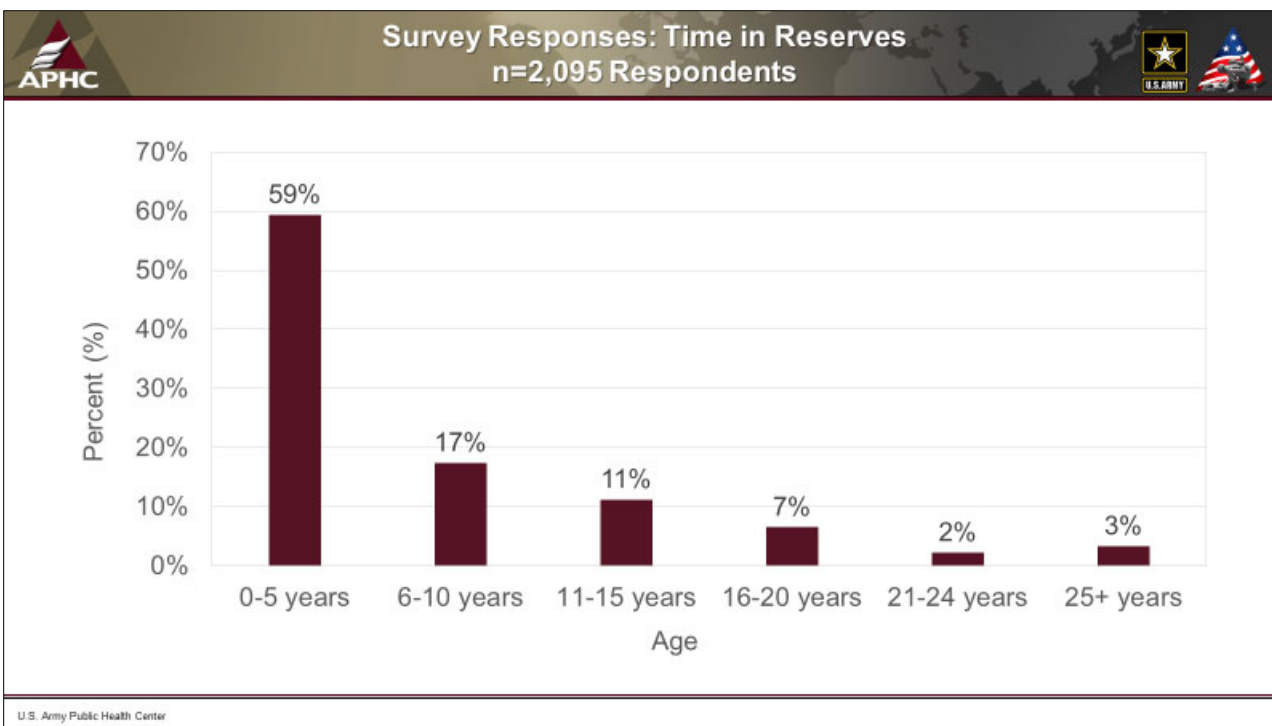


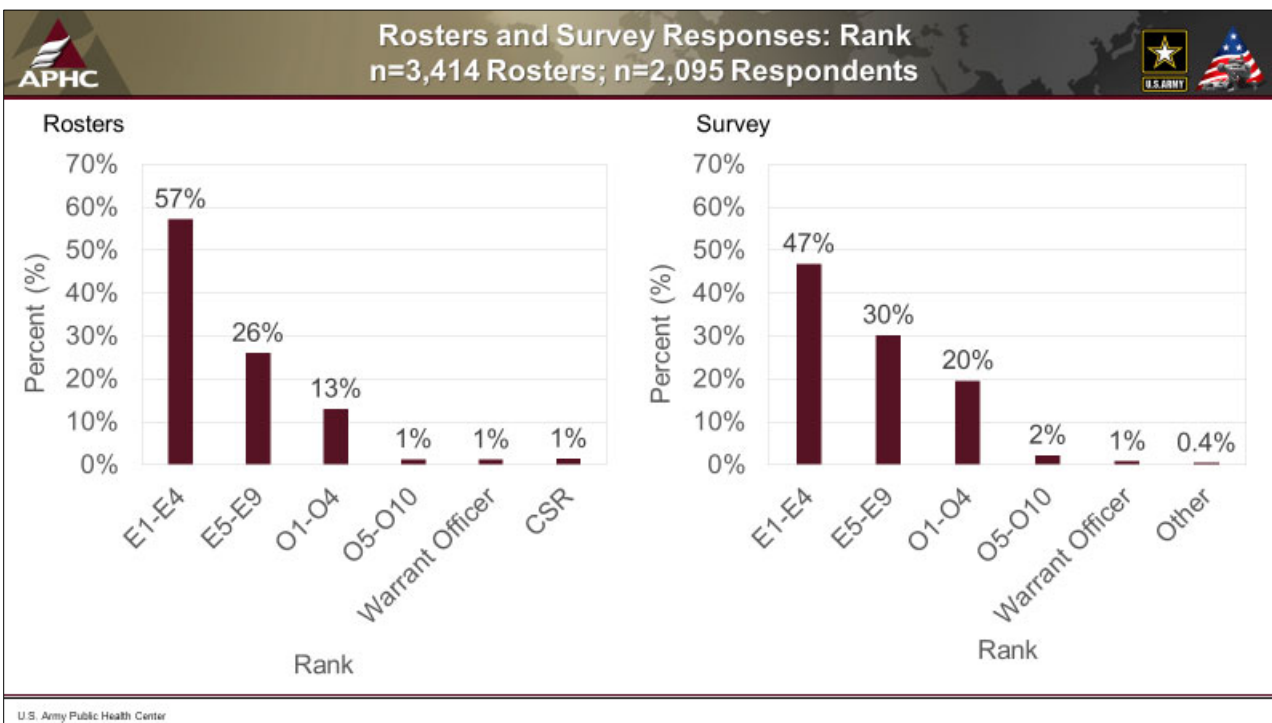
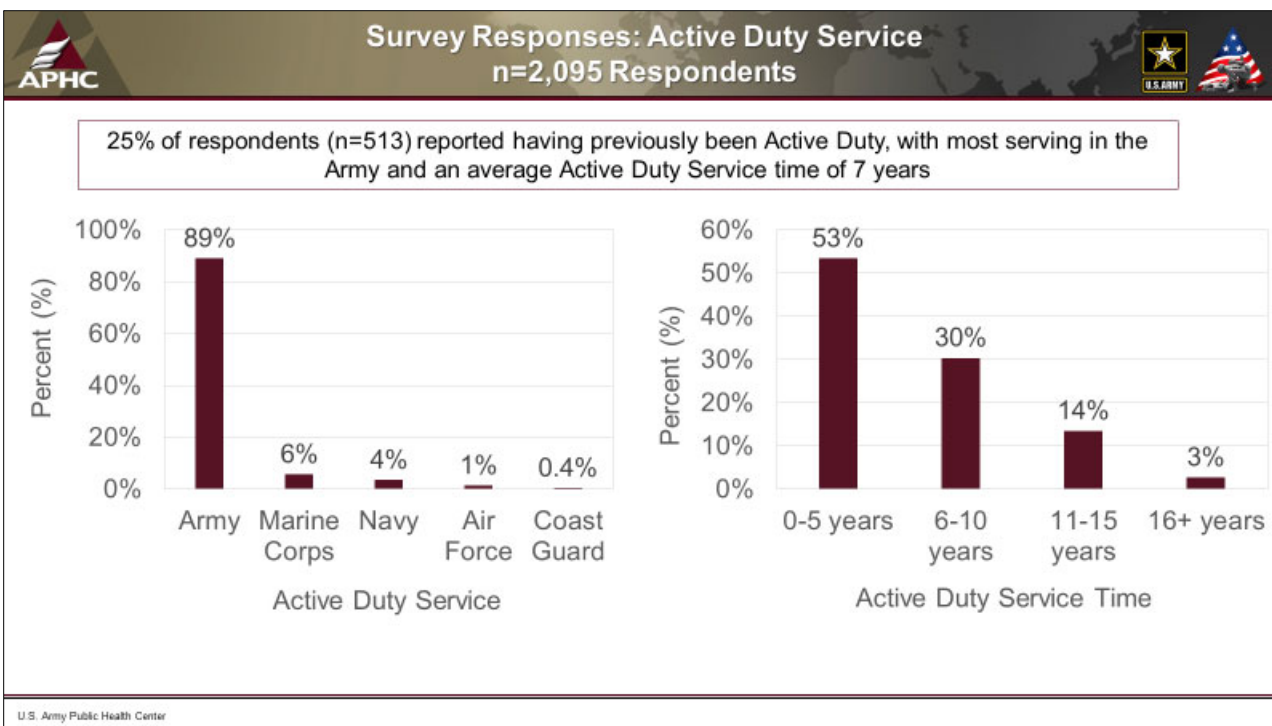
Supplementary Slides

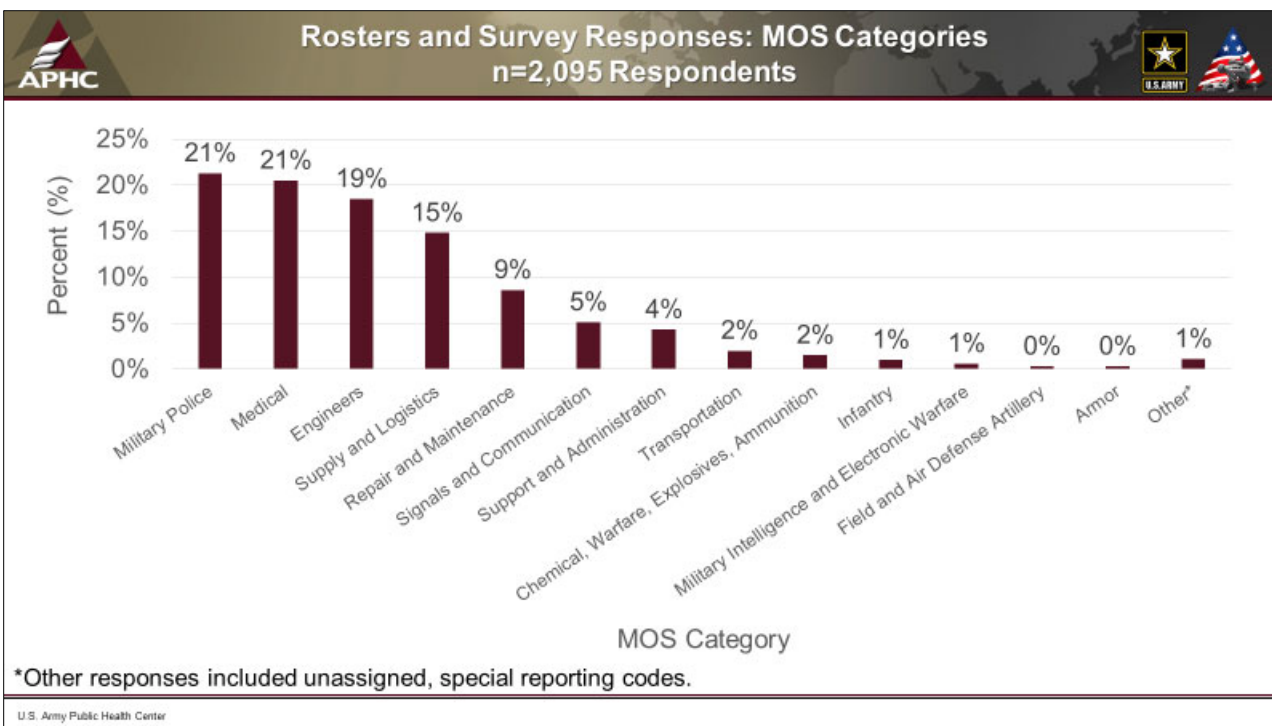
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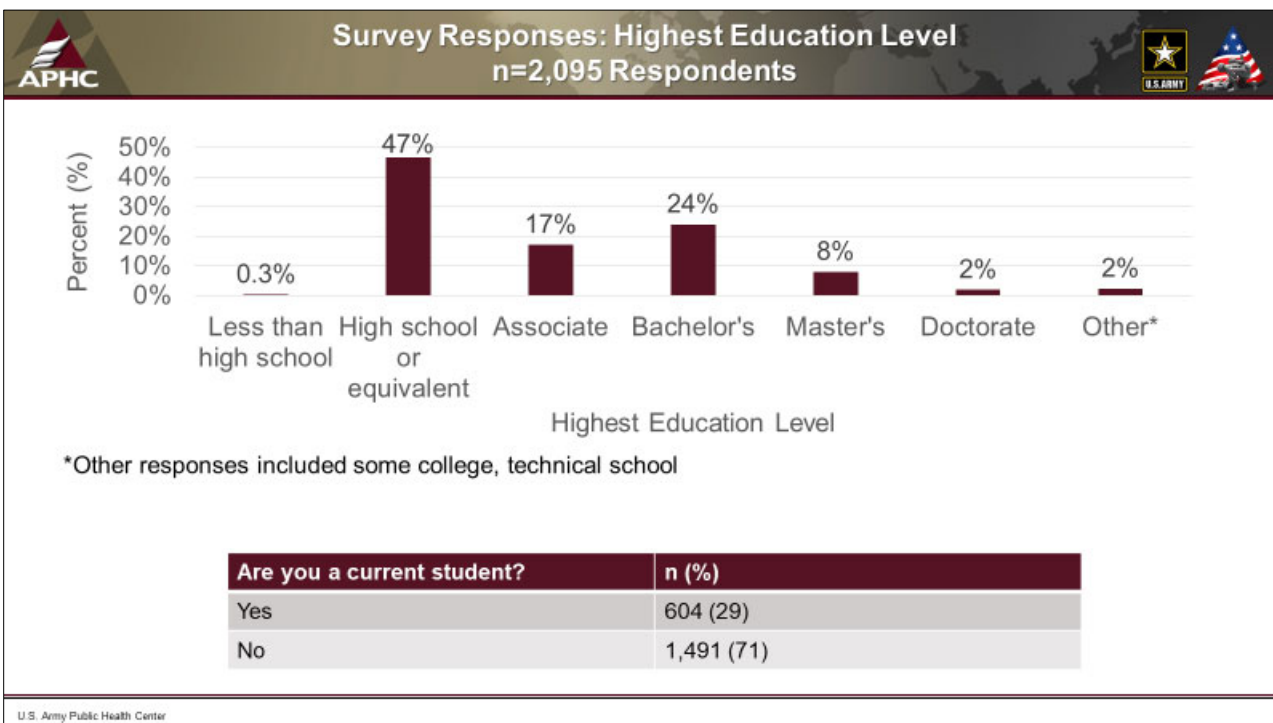
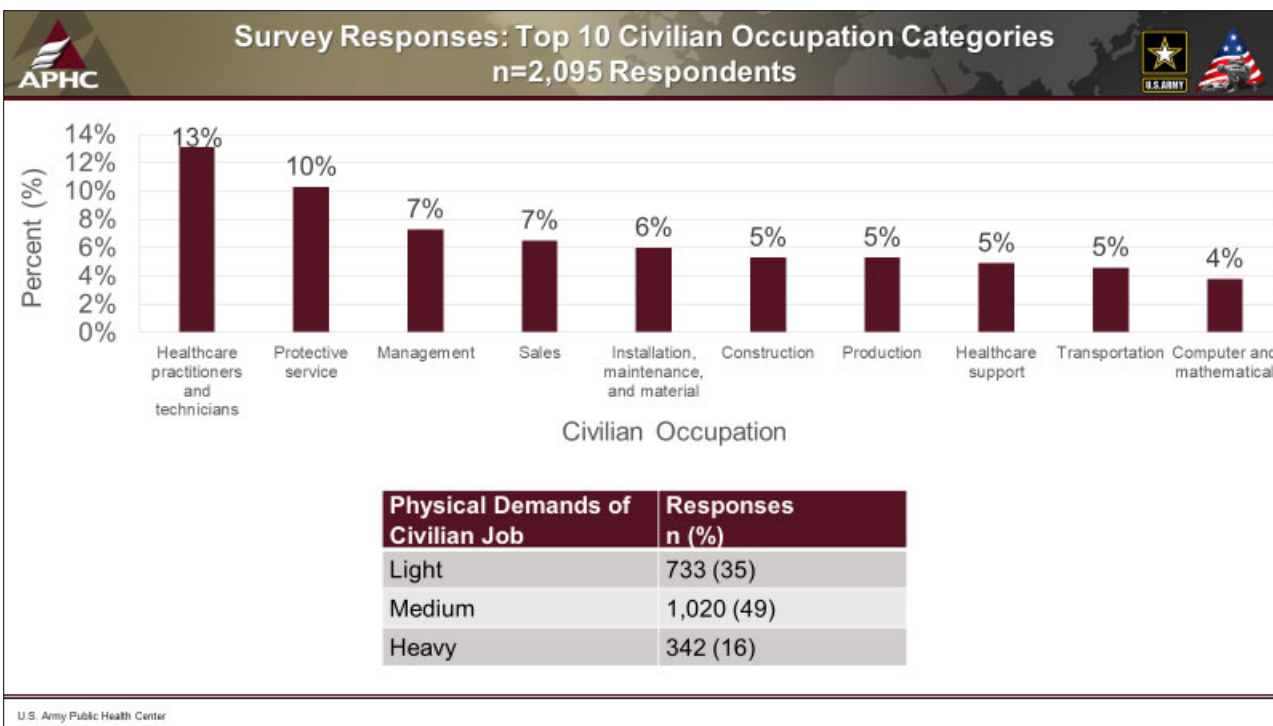


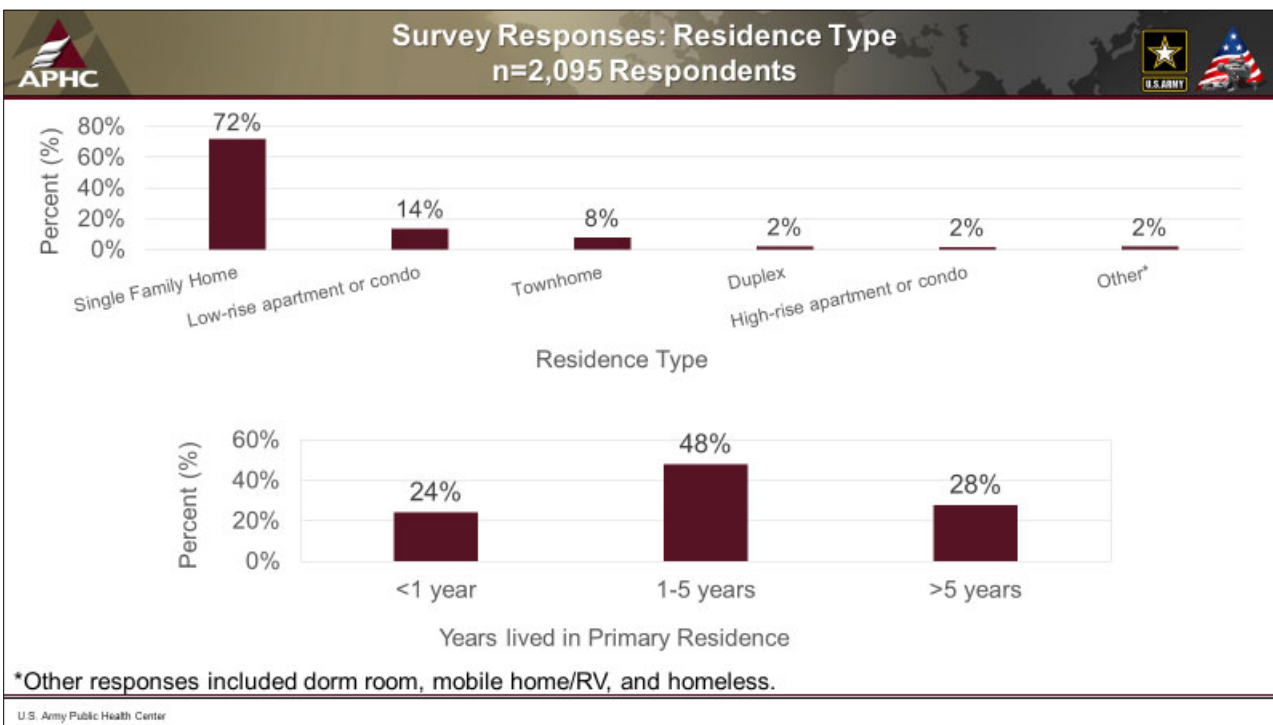
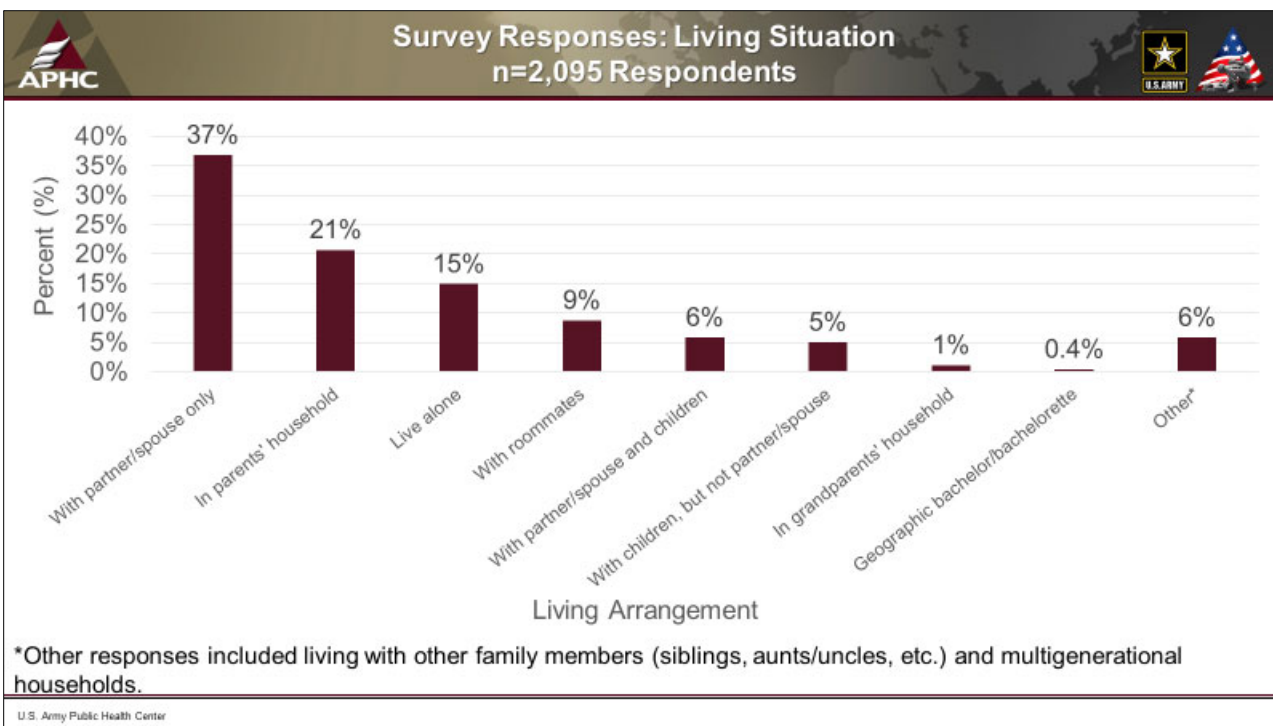


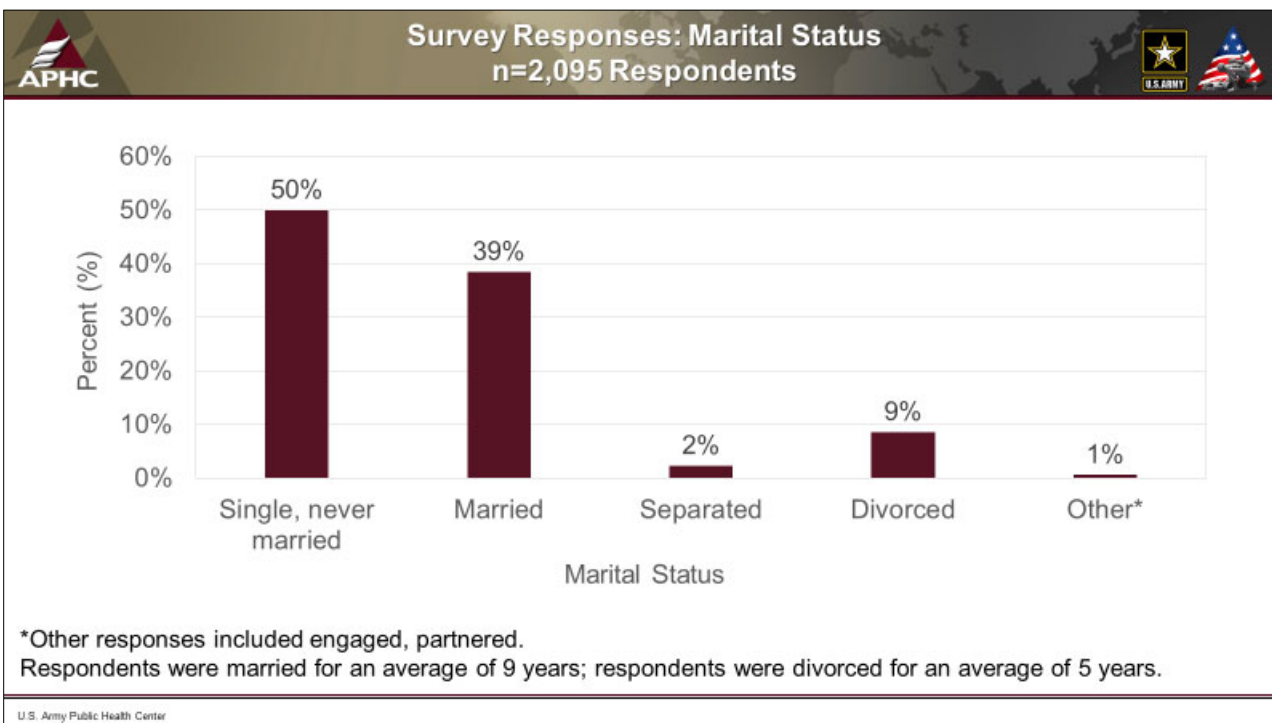
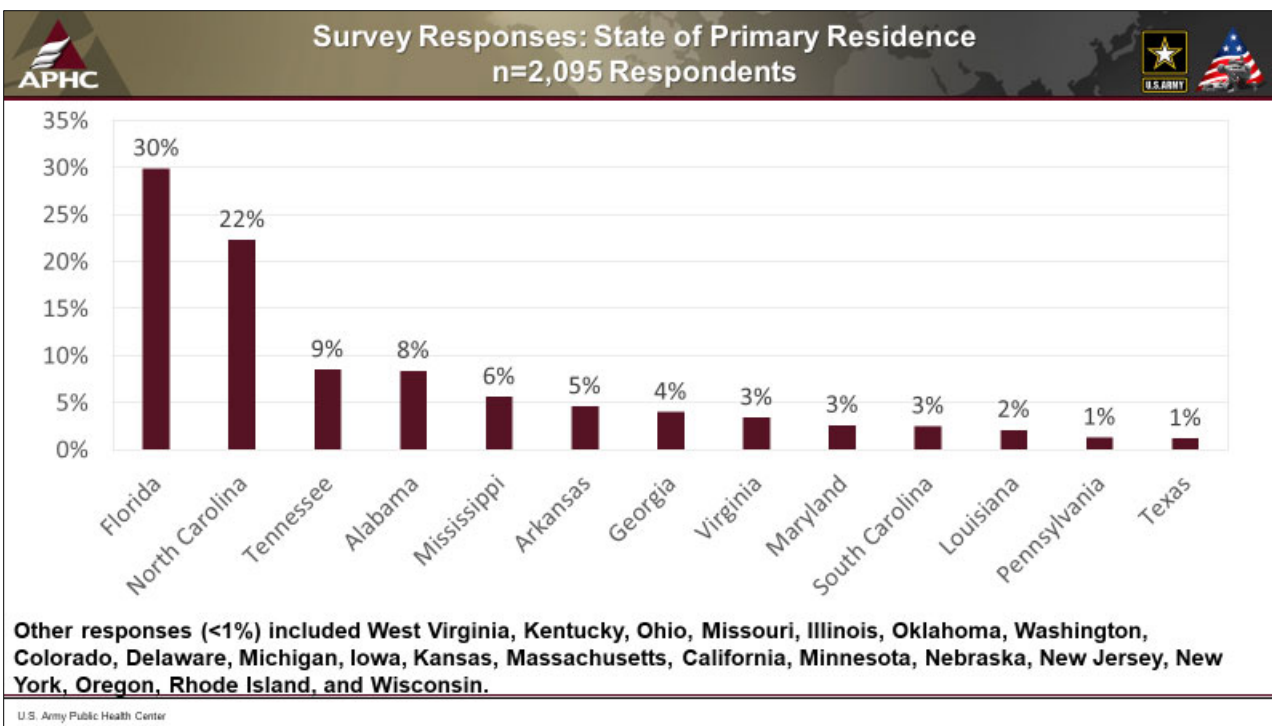
Rosters and Survey Responses: Top 10 MOSs
n=2,095 Respondents

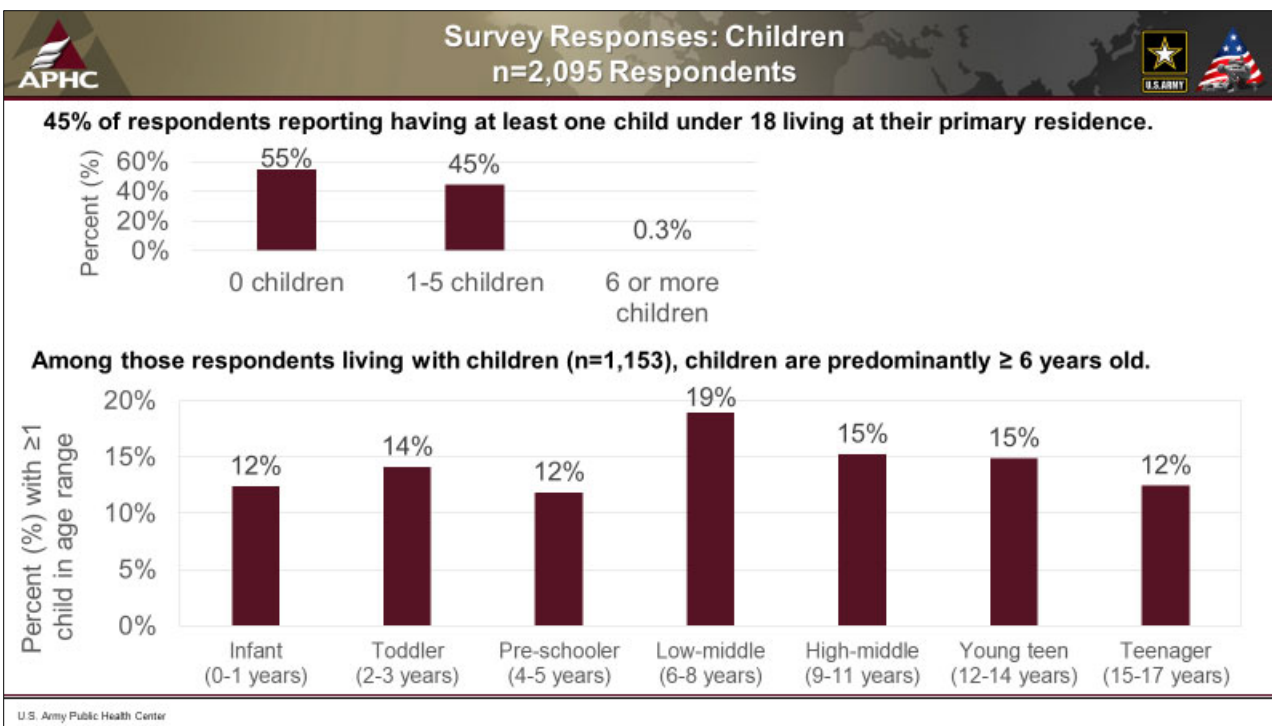
MOS	n (%)
31B, Military Police	379 (18)
12N, Horizontal Construction Engineer	123 (6)
68W, Combat Medic Specialist	97 (5)
92A, Automated Logistical Specialist	77 (4)
91B, Wheeled Vehicle Mechanic	85 (4)
92Y, Unit Supply Specialist	84 (4)
92F, Petroleum Supply Specialist	65 (3)
12W, Carpentry and Masonry Specialist	61 (3)
25B, IT Specialist	47 (2)
12A, Engineer Senior Sergeant	43 (2)

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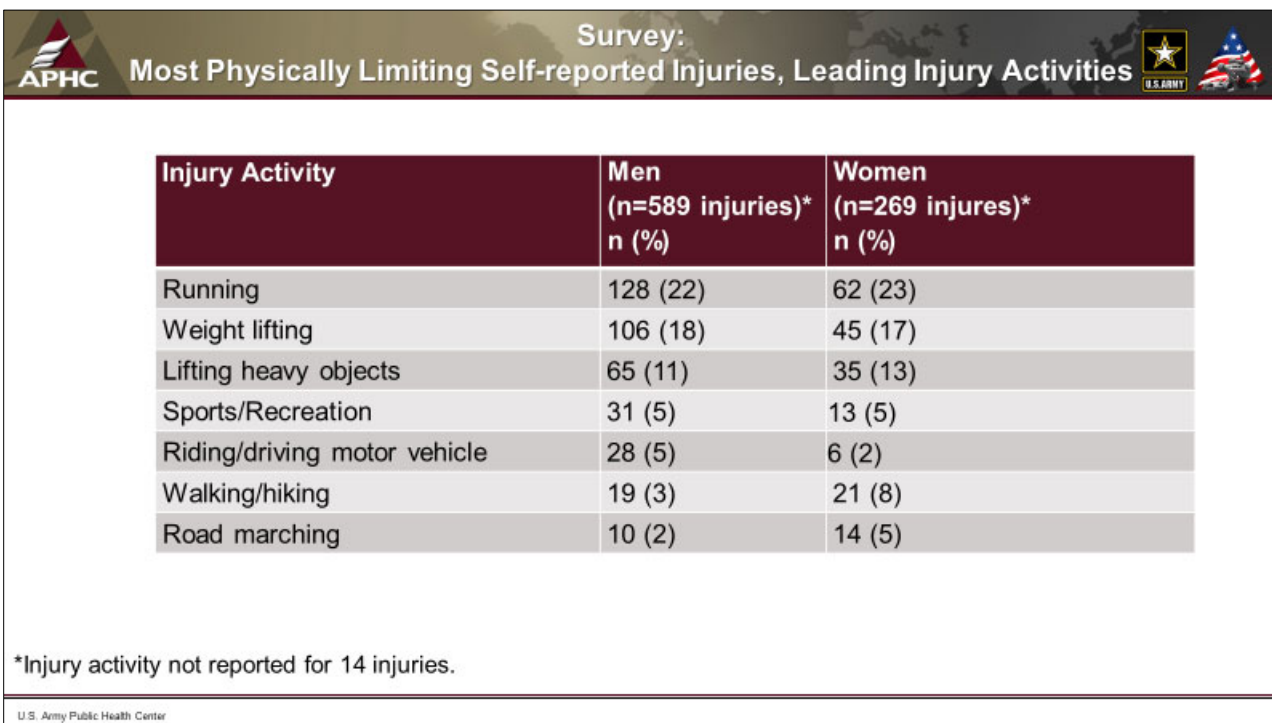
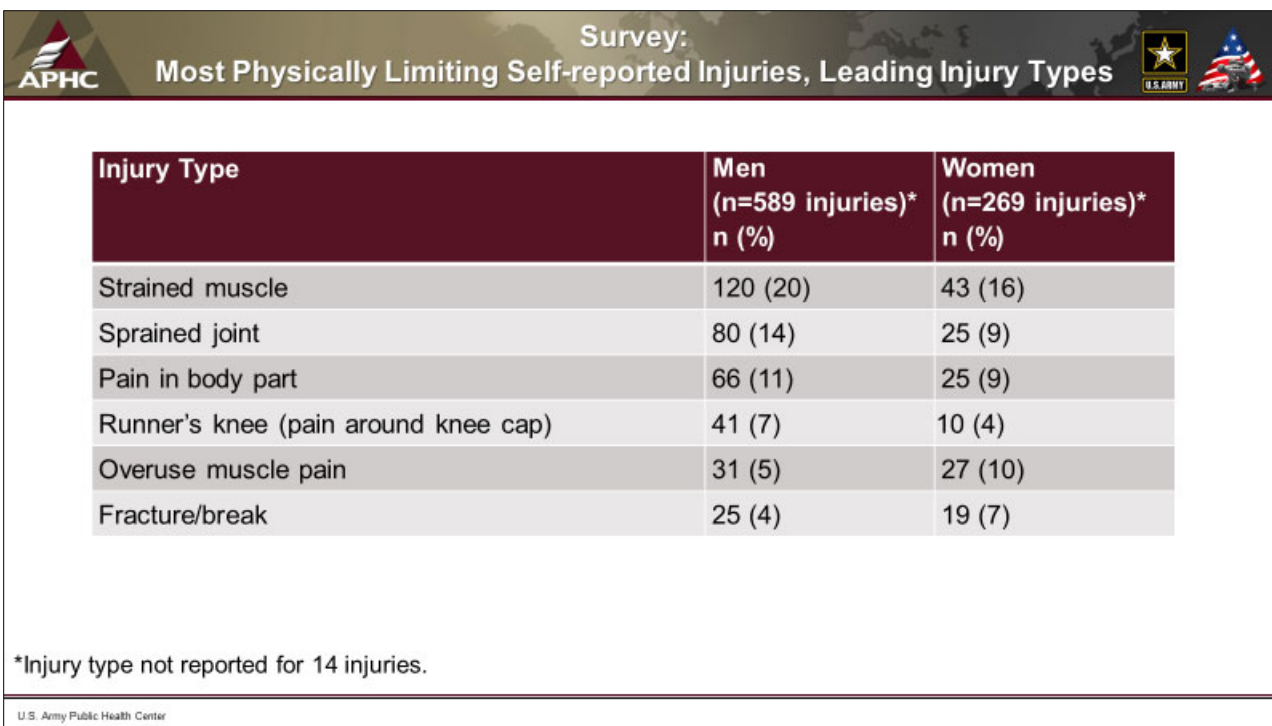


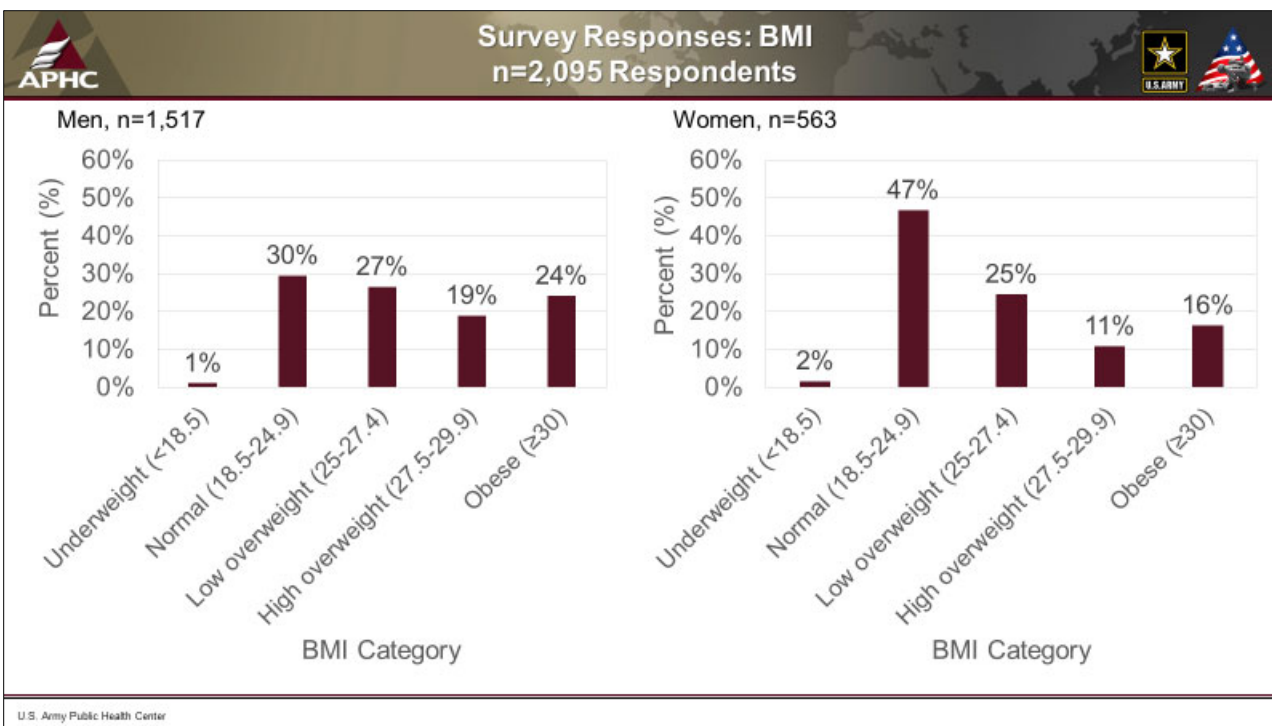
Survey:
Most Physically Limiting Self-reported Injuries, Leading Injured Body Areas

Body Area	Men (n=589 injuries)* n (%)	Women (n=269 injuries)* n (%)
Back (Lower)	128 (22)	49 (18)
Knee	119 (20)	54 (20)
Shoulders	67 (11)	38 (14)
Ankle	45 (8)	20 (7)
Foot	32 (5)	18 (7)
Hip	8 (1)	19 (7)

*Injured body area not reported for 14 injuries

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Injuries by Body Region, Stratified by Age
Leading Injured Body Areas

Men	Lower back n (% of all in age group)	Knee n (% of all in age group)	Shoulders n (% of all in age group)	Ankle n (% of all in age group)	Foot/toe n (% of all in age group)	Other n (% of all in age group)	Total
17-24	22 (17)	22 (17)	15 (12)	12 (9)	7 (6)	52 (40)	130
25-34	41 (21)	42 (21)	19 (10)	17 (9)	11 (6)	69 (35)	199
35-44	45 (27)	32 (19)	23 (14)	13 (8)	7 (4)	45 (27)	165
≥45	20 (21)	23 (24)	10 (11)	3 (3)	7 (8)	32 (34)	95

Women	Knee n (% of all in age group)	Lower back n (% of all in age group)	Shoulders n (% of all in age group)	Ankle n (% of all in age group)	Hip n (% of all in age group)	Other n (% of all in age group)	Total
17-24	14 (16)	10 (11)	12 (13)	6 (7)	9 (10)	39 (43)	90
25-34	22 (27)	13 (16)	8 (10)	5 (6)	8 (10)	26 (32)	82
35-44	14 (21)	17 (25)	14 (21)	7 (10)	1 (1)	14 (21)	67
≥45	4 (14)	9 (30)	4 (14)	2 (7)	1 (3)	10 (33)	30

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 Injuries by Body Region, Stratified by BMI Leading Injured Body Areas  							
Men Age groups	Lower back n (% of all in age group)	Knee n (% of all in age group)	Shoulders n (% of all in age group)	Ankle n (% of all in age group)	Foot/toe n (% of all in age group)	Other n (% of all in age group)	Total
18.5-24.9	27 (21)	20 (15)	11 (8)	8 (6)	8 (6)	57 (44)	131
25.0-27.49	34 (24)	31 (22)	17 (12)	3 (2)	9 (6)	49 (34)	143
27.5-29.99	23 (18)	27 (21)	14 (11)	17 (13)	5 (4)	43 (33)	129
≥30	44 (24)	41 (22)	25 (13)	17 (9)	10 (5)	49 (26)	186
Women Age groups	Knee n (% of all in age group)	Lower back n (% of all in age group)	Shoulders n (% of all in age group)	Ankle n (% of all in age group)	Hip n (% of all in age group)	Other n (% of all in age group)	Total
<18.5	-	4 (50)	1 (13)	-	2 (25)	1 (13)	8
18.5-24.9	15 (15)	17 (17)	18 (17)	9 (9)	11 (11)	33 (32)	103
25.0-27.49	12 (18)	10 (15)	8 (12)	5 (8)	9 (14)	16 (24)	60
27.5-29.99	11 (34)	6 (19)	2 (6)	1 (3)	2 (6)	10 (31)	32
≥30	6 (10)	12 (20)	9 (15)	5 (8)	4 (7)	24 (40)	60

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 Injuries by Injury Type, Stratified by Age Leading Injury Types  							
Men Age groups	Strained muscle n (% of all in age group)	Sprained joint n (% of all in age group)	Pain in body part n (% of all in age group)	Runner's Knee n (% of all in age group)	Overuse muscle pain n (% of all in age group)	Other n (% of all in age group)	Total
17-24	20 (15)	13 (10)	13 (10)	11 (8)	6 (5)	67 (52)	130
25-34	46 (23)	33 (17)	22 (11)	10 (5)	8 (4)	80 (40)	199
35-44	36 (22)	26 (16)	23 (14)	11 (7)	9 (5)	60 (36)	165
≥45	18 (19)	8 (8)	8 (8)	9 (9)	8 (8)	44 (46)	95
Women Age groups	Strained muscle n (% of all in age group)	Overuse muscle pain n (% of all in age group)	Sprained joint n (% of all in age group)	Pain in body part n (% of all in age group)	Fracture n (% of all in age group)	Other n (% of all in age group)	Total
17-24	14 (16)	10 (11)	7 (8)	8 (9)	9 (10)	42 (47)	90
25-34	12 (15)	5 (6)	8 (10)	7 (9)	5 (6)	45 (55)	82
35-44	12 (18)	10 (15)	8 (12)	8 (12)	2 (3)	27 (41)	67
≥45	5 (17)	2 (7)	2 (7)	2 (7)	3 (10)	16 (53)	30

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 Injuries by Body Region, Stratified by BMI Leading Injury Types  							
Men	Strained muscle	Sprained joint	Pain in body part	Runner's Knee	Overuse muscle pain	Other	Total
BMI categories	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	
18.5-24.9	31 (24)	17 (13)	9 (7)	9 (7)	5 (4)	60 (46)	131
25.0-27.49	33 (23)	16 (12)	12 (8)	9 (6)	4 (3)	69 (48)	143
27.5-29.99	21 (16)	19 (15)	21 (16)	7 (5)	4 (3)	57 (44)	129
≥30	35 (19)	28 (15)	24 (13)	16 (9)	11 (6)	72 (38)	186
Women	Strained muscle	Overuse muscle pain	Sprained joint	Pain in body part	Fracture	Other	Total
BMI categories	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	n (% of all in age group)	
<18.5	2 (25)	1 (13)	-	-	-	5 (63)	8
18.5-24.9	17 (17)	8 (8)	10 (10)	10 (10)	8 (8)	50 (49)	103
25.0-27.49	14 (21)	7 (11)	7 (11)	3 (5)	7 (11)	28 (42)	66
27.5-29.99	1 (3)	3 (9)	2 (6)	5 (16)	2 (6)	19 (59)	32
≥30	9 (15)	8 (13)	6 (10)	7 (12)	2 (3)	28 (47)	60

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 Health Behaviors: Tobacco Use Cigarette Smoking  		
Current smokers only (smoked in the past 30 days)	Men n=141	Women n=12
Age at first time you tried smoking (years ± SD)	13.1 ± 2.9	13.5 ± 2.8
How long have you smoked? (years ± SD)	14.0 ± 9.7	8.2 ± 6.8
In the past 30 days, how many days did you smoke? (days ± SD)	20.8 ± 11.4	20.2 ± 13.5
In the past 30 days, how many cigarettes did you smoke per day on average? (cigarettes ± SD)	8.1 ± 8.0	5.3 ± 4.5
In the past 12 months, have you stopped smoking for at least a day because you were trying to quit? (Yes: n (%))	60 (43)	7 (58)
Former smokers only	Men n=159	Women n=29
How long did you smoke? (years ± SD)	8.0 ± 6.6	8.0 ± 5.8
How long ago did you quit? (years ± SD)	7.7 ± 6.9	10.3 ± 8.6

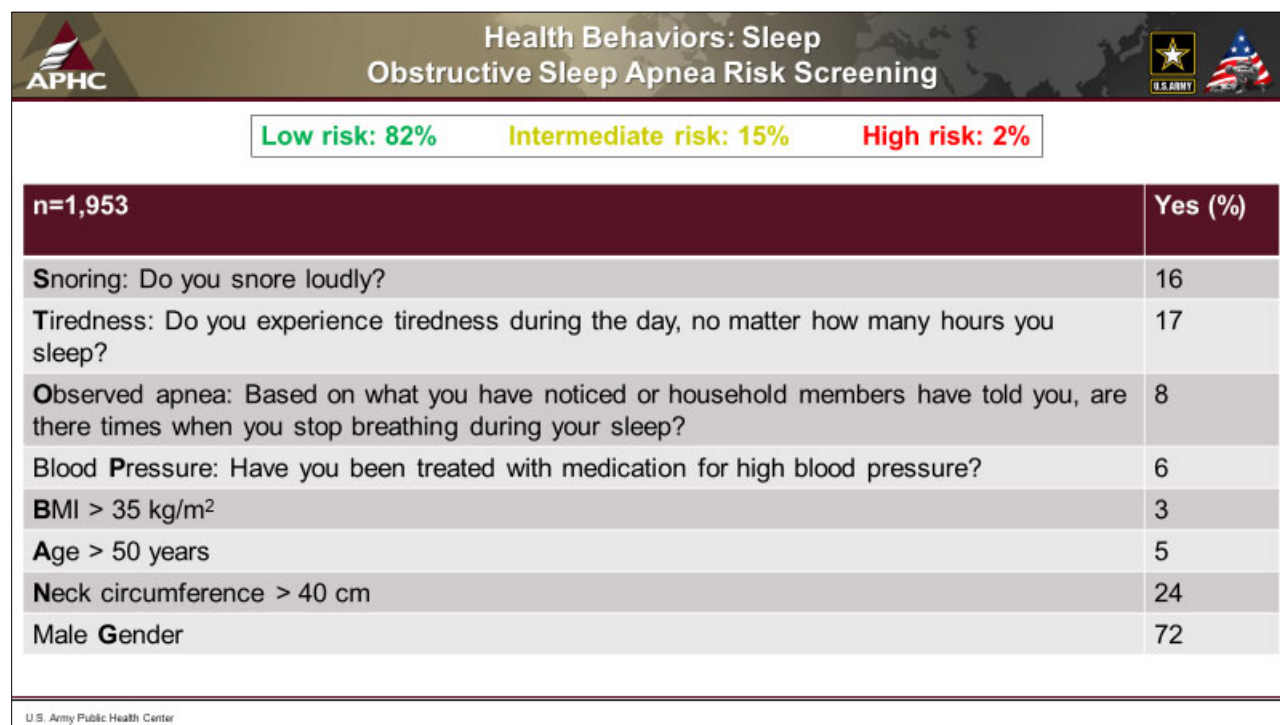
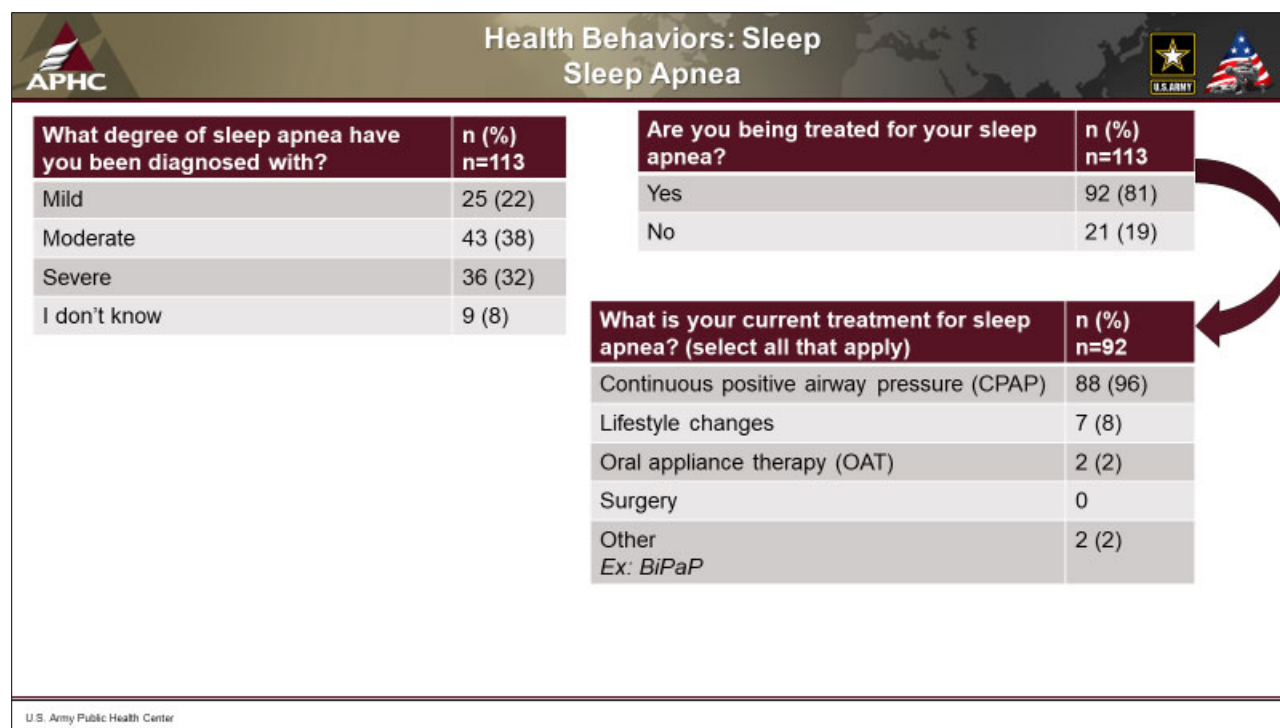
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 Health Behaviors: Tobacco Smokeless tobacco Use  		
Current smokeless tobacco users only, used in the past 30 days	Men n=161	Women n=7
How long have you used smokeless tobacco? (years $\pm$ SD)	10.0 $\pm$ 9.0	4.6 $\pm$ 5.9
In the past 30 days, how many days did you use smokeless tobacco? (days $\pm$ SD)	20.0 $\pm$ 11.3	18.0 $\pm$ 15.0
How many cans do you use per day on average? (cans $\pm$ SD)	1.3 $\pm$ 2.1	1.0 $\pm$ 0.8
How many pouches do you use per day on average? (pouches $\pm$ SD)	2.5 $\pm$ 6.3	2.1 $\pm$ 3.9
How many plugs do you use per day? (plugs $\pm$ SD)	0.1 $\pm$ 0.5	N/A
In the past 12 months, have you stopped using smokeless tobacco for at least a day because you were trying to quit? (Yes: n (%))	48 (30)	5 (71)
Former smokeless tobacco users only	Men n=78	Women n=6
How long ago did you quit? (years $\pm$ SD)	6.2 $\pm$ 8.0	6.1 $\pm$ 7.2

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 Health Behaviors: Tobacco Vaping/e-cigarette Use  		
Current and former e-cigarette users	Men n=186	Women n=46
Which best describes your e-cigarette use:		
• Use(d) e-cigarettes or personal vaporizer only (n (%))	116 (62)	34 (74)
• Use(d) e-cigarettes or personal vaporizer while also smoking cigarettes (n (%))	17 (9)	3 (7)
• Use(d) e-cigarettes or personal vaporizer in an effort to stop smoking cigarettes (n (%))	53 (29)	9 (20)
Current e-cigarette users only, used in the past 30 days	Men n=125	Women n=37
How long have you used e-cigarettes? (years $\pm$ SD)	2.9 $\pm$ 2.4	2.4 $\pm$ 1.8
In the past 30 days, how many days did you use e-cigarettes? (days $\pm$ SD)	21.4 $\pm$ 11.1	20.4 $\pm$ 11.5
How many puffs per day do you take on average? (puffs $\pm$ SD)	91.0 $\pm$ 136.6	56.8 $\pm$ 85.7
In the past 12 months, have you stopped using e-cigarettes for at least a day because you were trying to quit? (Yes: n (%))	43 (34)	14 (38)
Former e-cigarette users only	Men n=61	Women n=10
How long did you use e-cigarettes? (years $\pm$ SD)	1.1 $\pm$ 1.1	1.0 $\pm$ 0.8
How long ago did you quit? (years $\pm$ SD)	2.2 $\pm$ 2.3	1.4 $\pm$ 1.5

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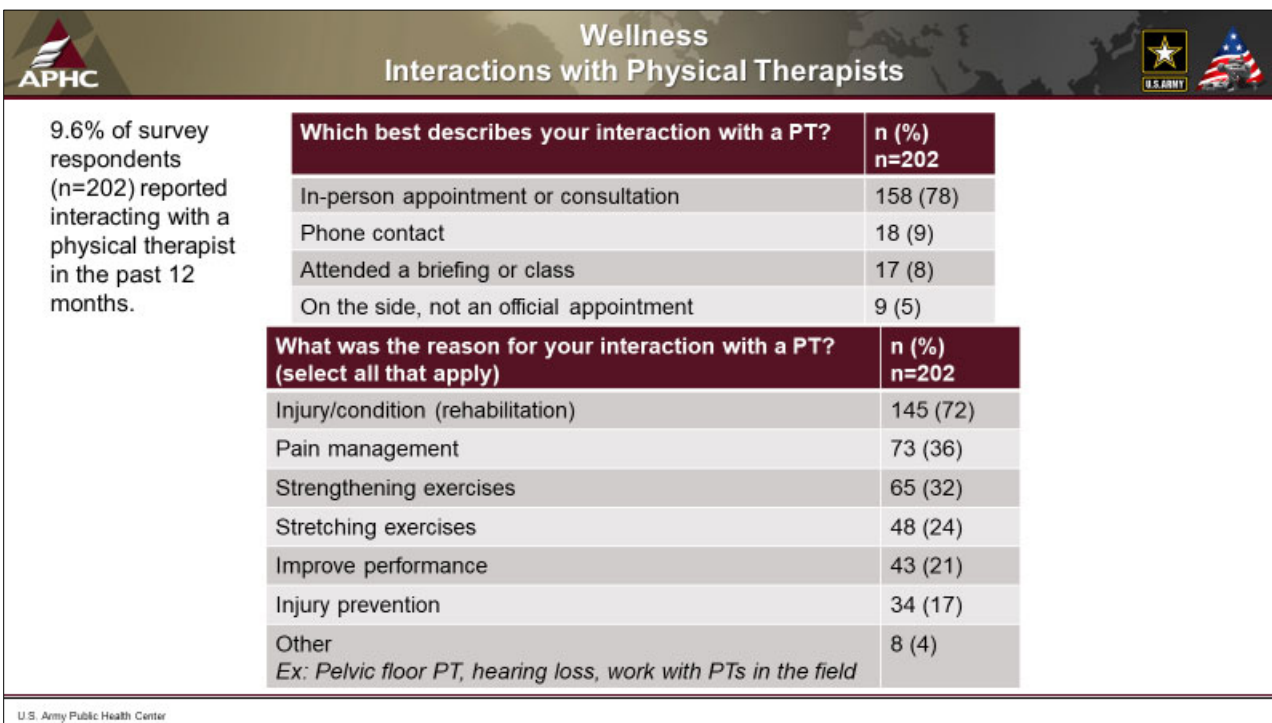
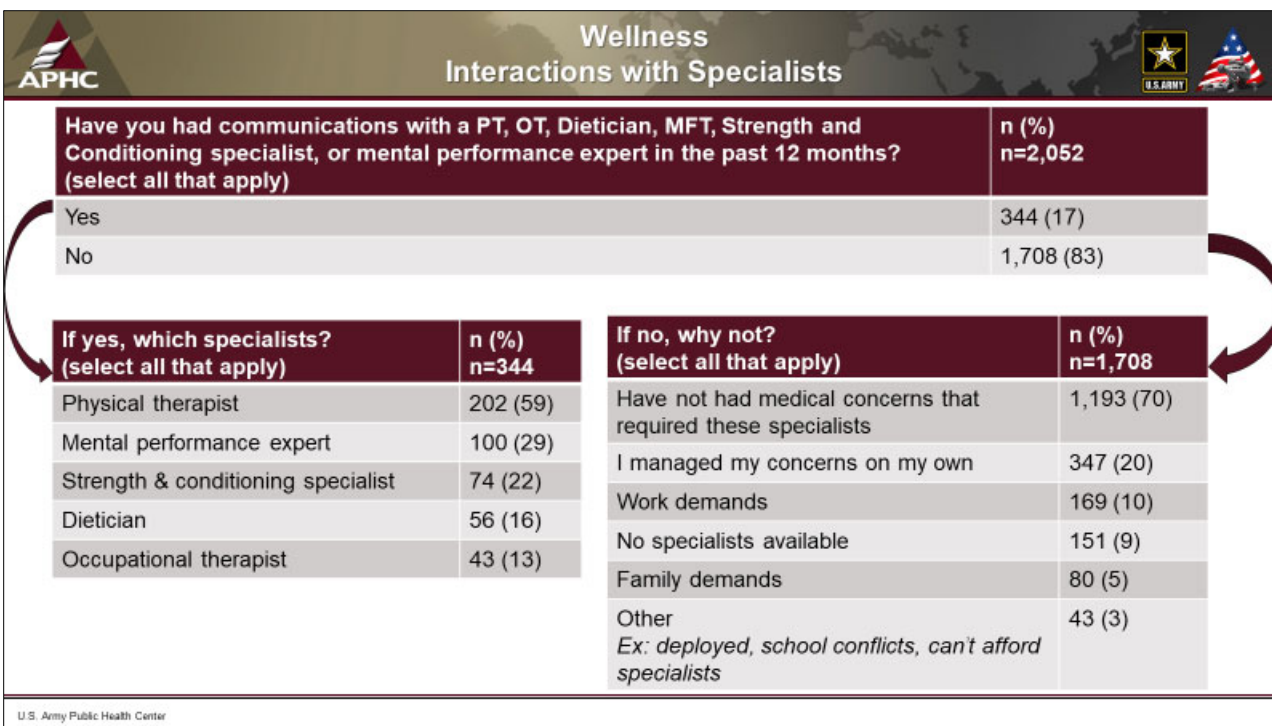
Health Behaviors: Nutrition						
During the last 30 days, how often did you eat/drink the following foods/beverages? n=2,033	Rarely or never %	1-2 servings per week %	3-6 servings per week %	1 serving per day %	2-3 servings per day %	4+ servings per day %
Fruit <i>1 cup of frozen/canned fruit, 1 cup of 100% fruit juice, or ½ cup dried fruit</i>	9	22	31	19	16	3
Vegetables <i>1 cup of raw/cooked vegetables, 1 cup of 100% vegetable juice, or 2 cups of raw leafy greens</i>	6	16	33	17	23	5
Protein <i>1oz of meat/poultry/fish, ½ cup beans, 1 egg, 1tbsp peanut butter, ½ oz nuts or seeds</i>	2	7	29	17	35	9
Dairy <i>1 cup of milk/yogurt/soymilk, 1.5 oz natural cheese, 2 oz processed cheese</i>	10	21	28	24	12	3
Whole Grains <i>1 slice of bread, 1 cup of ready-to-eat cereal, ½ cup of cooked rice/pasta/cereal</i>	5	18	30	22	21	4

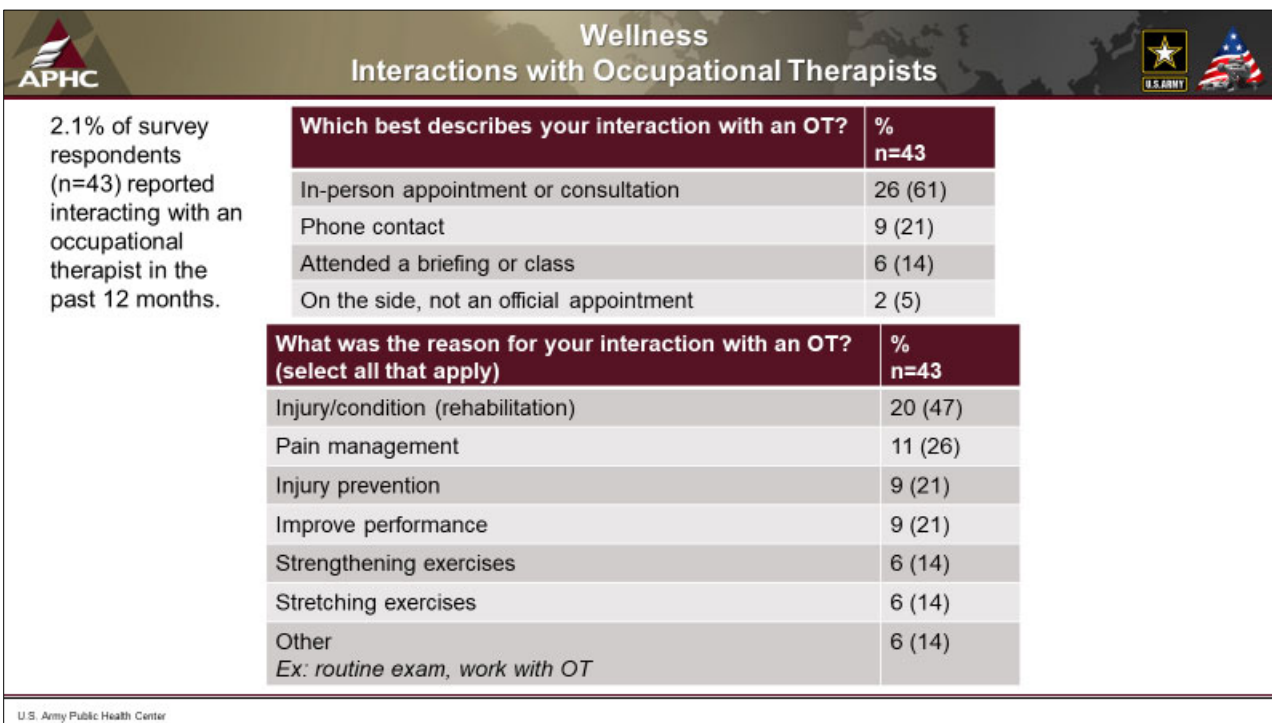
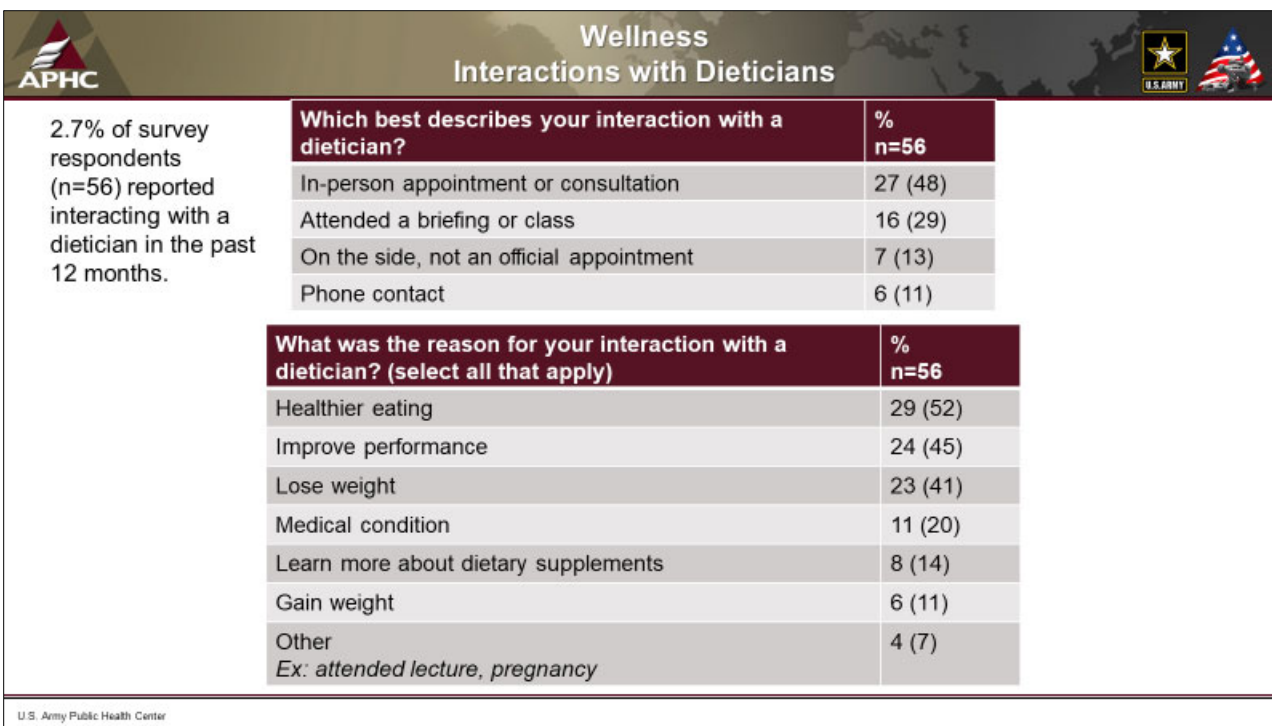
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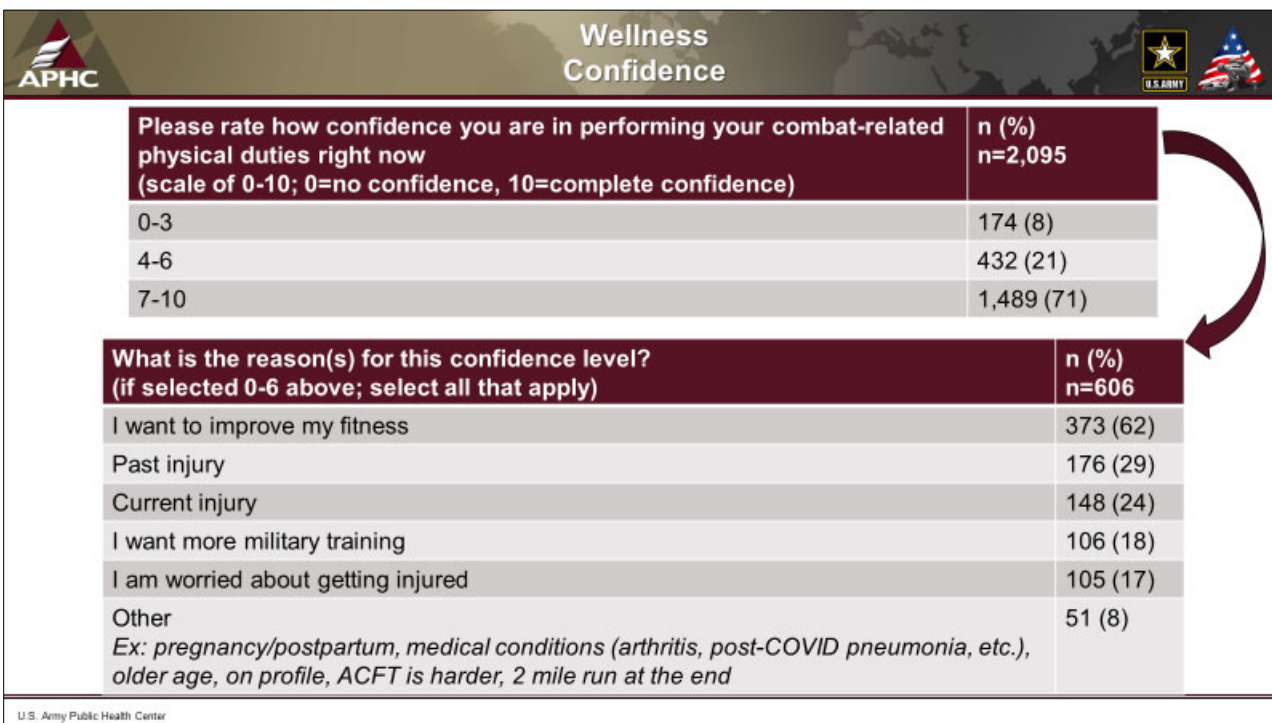
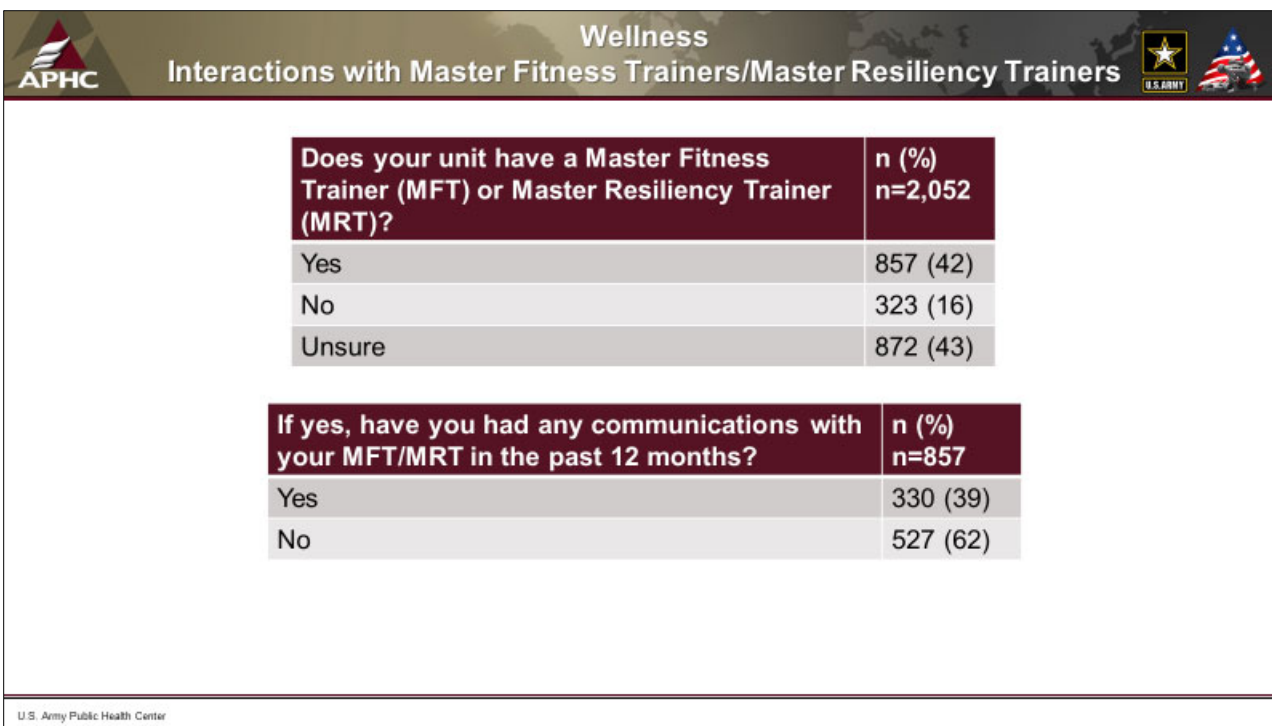
Health Behaviors: Nutrition					
n=2,037	Always %	Most of the time %	Sometimes %	Rarely %	Never %
How often do you refuel with food or drink within 30-60 minutes of a workout? <i>1 piece of fruit and a handful of nuts, 1 small yogurt, 1 cup of chocolate milk, a granola bar or sports bar</i>	16	32	30	14	8

n=2,037	
Average # of meals per week prepared outside of the home (at a restaurant or similar establishment)	3 ± 3
Average # of meals per week that are pre-packaged	2 ± 3
Average days per week eating breakfast	4 ± 1
Average days per week eating lunch	6 ± 2
Average days per week eating dinner	6 ± 2

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Health Knowledge: Injury Prevention		
• Health knowledge questions were added, as another metric for assessing impacts of H2F Pilot implementation. • Topics with low correct response rates may suggest focus areas for educational modules.		
n=2,039	Yes n (%)	No n (%)
Do you feel knowledgeable about injury prevention?	1,652 (81)	387 (19)

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Health Knowledge: Sleep		
• Health knowledge questions were added, as another metric for assessing impacts of H2F Pilot implementation. • Topics with low correct response rates may suggest focus areas for educational modules.		
Sleep Knowledge Questions n=2,058	Correct Response	Respondents with correct response n (%)
How many hours of sleep do most adults need in a 24-hour period?	7-8 hours	1,663 (81)
What is a benefit of napping?	To get sufficient sleep every 24 hours	911 (44)
To help settle the mind to get restful sleep, one can:	Practice visualization or relaxation exercises	1,154 (56)
To counter the effects of sleep deprivation during sustained operations, Soldiers may utilize the following countermeasures:	All of the above • Temporarily use caffeine • Temporarily use naps • Bank sleep for up to 2 weeks	836 (41)
To determine how much sleep the body needs, you should:	All of the above • Sleep until rested and restored • Sleep until you can wake without an alarm • Establish a consistent sleep/wake routine	924 (45)

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Health Knowledge: Activity and Nutrition		
  		
Activity Knowledge Questions n=2,039	Correct Response	Respondents with correct response n (%)
The American College of Sports Medicine recommends that adults get at least _____ minutes of moderate-intensity aerobic exercise per week.	150	908 (45)
At a minimum, how many days of balanced, total body strength training should you do in a week?	2	527 (26)
Nutrition Knowledge Questions n=2,030	Correct Response	Respondents with correct response n (%)
When should you eat AFTER a workout to maximize the benefits?	More than 30 minutes but less than 60 minutes	1,006 (50)
What is the <u>minimum</u> number of servings of fruits and vegetables you should consume each day?	8	122 (6)
Which of the following is considered one serving of fruit?	One cup (8 ounces) of 100% fruit juice	464 (23)
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Health Knowledge: Stress		
  		
Stress Knowledge Question n=2,014	Correct Response	Respondents with correct response n (%)
Which of the following health conditions can result from chronic stress?	All of the above • Depression • Digestive problems • Sleep problems • Weight gain	1,842 (91)
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Appendix C

Comparison of Survey Respondents (Evaluation Sample) and Non-Respondents

Table C-1. Comparison of Demographics and Injury Data from Electronic Medical Records*: Survey Respondents vs. Non-Respondents

Variable	Categories	Survey respondents* with medical record (n= 2,070) n (%)	Non-respondents with medical record (n=1,829) n (%)	Chi-square p-value
Sex	Male Female	1513 (73) 557 (27)	1263 (69) 566 (31)	<0.01
Age (as of 9/15/2021 based on dob)	<25 25-34 35-44 ≥45	714 (34) 760 (37) 379 (18) 217 (10)	700 (38) 691 (38) 272 (15) 166 (9)	<0.01
BMI (calculated from DMSS height and weight data)	Underweight (<18.50) Normal (18.50-24.99) Low overweight (25.00-27.49) High overweight (27.50-29.99) Obese (≥30.00) Missing height and/or weight data	34 (2) 657 (31) 345 (16) 233 (11) 196 (9) 605 (29)	27 (1) 640 (35) 312 (17) 176 (10) 184 (10) 490 (27)	0.14
Race	White Black Other	1317 (64) 598 (29) 155 (7)	1052 (57) 652 (36) 125 (7)	<0.0001
Marital status	Single Married Other/unknown	1131 (55) 801 (39) 138 (7)	1068 (58) 653 (36) 108 (6)	0.06
Education level	High school or less < 4 years college Bachelor's or above Other/unknown	1183 (57) 340 (16) 500 (24) 47 (2)	1187 (65) 235 (13) 370 (20) 37 (2)	<0.0001
Treatment for at least one injury at an MTF or using TRICARE, July 2020 – December 2021	Yes No	414 (20) 1656 (80)	356 (19) 1473 (81)	0.67

Notes:

*Data source: Defense Medical Surveillance System via Armed Forces Health Surveillance Division

*Same population (n=2,095) with sufficiently complete survey responses evaluated in Briefing 1 (Appendix A) and Briefing 2 (Appendix B); 25 survey respondents and 2 non-respondents did not have medical record data