

# 2018 Health Related Behaviors Survey

## Health Promotion and Disease Prevention Among the Active Component

**T**he Health Related Behaviors Survey (HRBS) is the U.S. Department of Defense's (DoD's) flagship survey for understanding the health, health-related behaviors, and well-being of service members. Fielded periodically for more than 30 years, the HRBS includes content areas that might affect military readiness or the ability to meet the demands of military life. The Defense Health Agency asked the RAND Corporation to revise and field the 2018 HRBS among members of both the active component and the reserve component. This brief discusses findings for the active component.

In this brief, results for physical activity, weight status, screen time, annual physical assessment, sleep health, and use of substances to stay awake are reviewed. Some results are also compared with Healthy People 2020 (HP2020) objectives established by the U.S. Department of Health and Human Services for the general U.S. population. Because the military differs notably from the general population (for example, service members are more likely to be young and male than is the general population), these comparisons are offered only as a benchmark of interest.

### Physical Activity

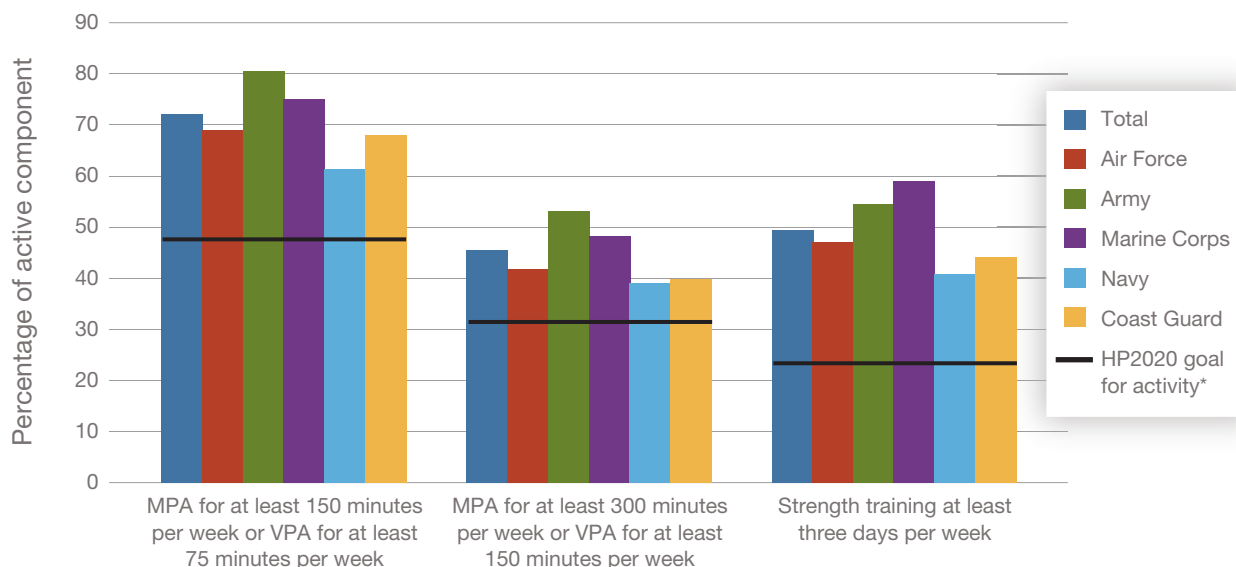
The military has fitness standards that are aimed at encouraging physical fitness because physical fitness is essential for a ready force. Poor physical fitness is associated with injuries and chronic conditions that can adversely impact military readiness. Good physical fitness has also been associated with mental resilience and physical endurance.

HP2020 sets objectives for moderate physical activity (MPA), vigorous physical activity (VPA), and muscle (or strength) training for the U.S. population. These targets include

- at least 47.9 percent engaging in MPA for at least 150 minutes per week or VPA for at least 75 minutes per week
- at least 31.3 percent engaging in MPA for more than 300 minutes per week or VPA at least 150 minutes per week
- at least 24.1 percent engaging in muscle-strengthening activities on two or more days per week.

The 2018 HRBS found that active component members compared favorably to each of these standards (see Figure 1). Altogether, 71.8 percent (confidence interval [CI]: 70.8–72.9) of active component members reported MPA for at least 150 minutes per week or VPA for at least 75 minutes per week, and 45.3 percent (CI: 44.1–46.6) reported MPA for at

FIGURE 1  
Physical Activity, by Service Branch



\* While the HP2020 goal for strength-training activities is at least two days per week, the 2018 HRBS measure identifies active component members engaging in such activities at least three days per week. As a result, the HRBS measure underestimates the proportion who met the HP2020 goal for strength training.

## Methods

RAND fielded the 2018 HRBS among active component and reserve component U.S. military service members in the Air Force, Army, Marine Corps, Navy, and Coast Guard between October 2018 and March 2019. The 2018 HRBS was a web-based confidential survey, which allowed researchers to target reminders to nonresponders and to reduce survey burden by linking responses to administrative data.

The sampling frame used a random sampling strategy stratified by service branch, pay grade, and gender. The overall weighted response rate for the survey was 9.6 percent, yielding a final analytic sample of 17,166 responses. Imputation was used to address missing data, a statistical procedure that uses the available data to predict missing values. To represent the active component population, RAND researchers weighted responses to account for the oversampling of service members in certain strata. In this research brief, point estimates and 95-percent CIs are reported.\*

RAND researchers tested differences in each outcome across levels of key factors or by subgroups—service branch, pay grade, gender, race/ethnicity, and age group—using a two-stage procedure based on a Rao-Scott chi-square test for overall differences across levels within a single factor and, if the overall test was statistically significant, two-sample *t*-tests that explored all possible pairwise comparisons between levels of the factors (for example, men versus women). Readers interested in these differences should consult the full 2018 HRBS active component final report at [www.rand.org/t/rr4222](http://www.rand.org/t/rr4222).

This brief is one of eight on the active component; this brief and six of the other seven each correspond to a different chapter in the full report, with the eighth presenting an overview of all findings and policy implications. A similar series of eight briefs discusses findings for the reserve component.

\* CIs provide a range in which the true population value is expected to fall. They account for sampling variability when calculating point estimates but do not account for problems with question wording, response bias, or other methodological issues that, if present in the HRBS, might bias point estimates.

least 300 minutes per week or VPA for at least 150 minutes per week. The proportion of active component members meeting these goals exceeded HP2020 goals in each of the services. In addition, 49.6 percent (CI: 48.4–50.8) of active component members reported strength training at least three days per week. The proportion of active component members in each of the services who reported strength training at least three days per week exceeded the HP2020 goal for twice-weekly strength training.

## Weight Status

Nearly 40 percent of the general U.S. population is classified as obese, increasing their risk for early mortality and several chronic diseases. HP2020 sets objectives for weight status for adults aged 20 or older based on the

following Centers for Disease Control and Prevention body mass index (BMI)<sup>1</sup> categories.

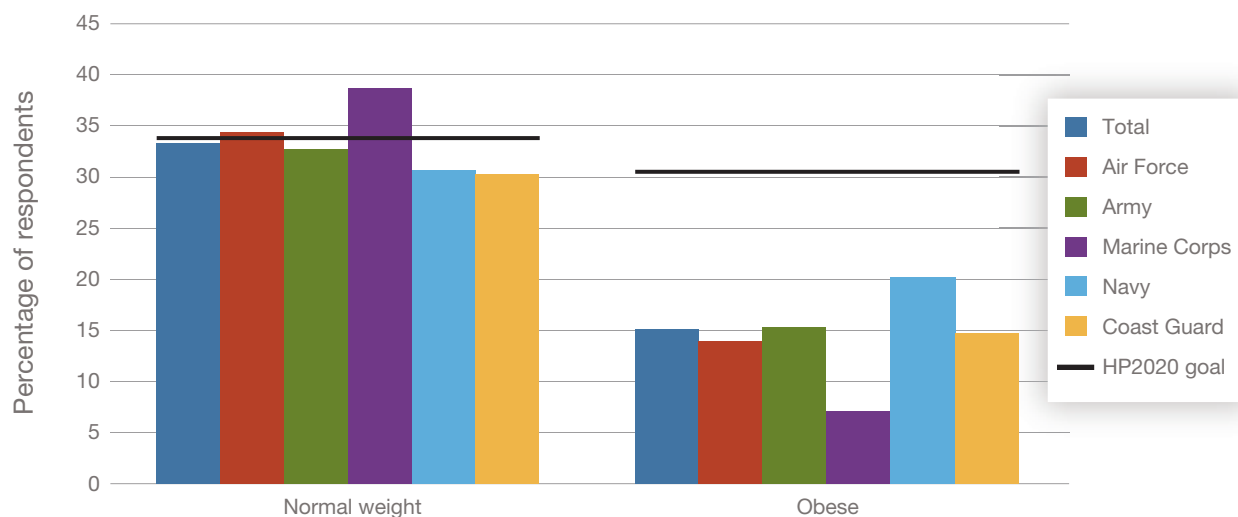
- underweight: less than 18.5 kg/m<sup>2</sup>
- normal weight: 18.5–24.0 kg/m<sup>2</sup> (HP2020 target: at least 33.9 percent of the population)
- overweight: 25.0–29.9 kg/m<sup>2</sup>
- obese: 30 or more kg/m<sup>2</sup> (HP2020 target: no more than 30.5 percent of the population).

It is important to note that BMI is an indirect measure of body fat, and more-muscular service members may have been misclassified as overweight or obese.

Overall, the 2018 HRBS found that, among active component members at least 20 years of age, 33.3 percent (CI: 32.1–34.5) were of normal weight. This is roughly comparable to the HP2020 goal for persons at least 20 years of age (see Figure 2). In addition, 15.1 percent (CI: 14.2–15.9) were obese, with the Navy most likely to have obese members. Although the military is meeting the HP2020 goal for obesity, the

<sup>1</sup> BMI is calculated as weight in kilograms (kg) divided by height in meters squared (m<sup>2</sup>).

FIGURE 2  
Weight Status, by Service Branch, for Active Component Members 20+ Years of Age



high percentage of overweight service members could be cause for concern. However, as noted, very muscular individuals may be incorrectly classified as overweight or obese based on standard BMI cutoffs (see Figure 2).

## Screen Time

Screen time—time spent looking at a desktop or laptop computer, television, smartphone, tablet, or other handheld device or gaming system—is generally a sedentary behavior. As such, it is associated with a greater risk of obesity and mortality. Indeed, research shows that screen time is a risk factor for many cardiometabolic diseases and mortality, independent of time spent exercising.

The 2018 HRBS found, overall, that 66.8 percent (CI: 65.6–68.0) of service members reported spending one to four hours per day looking at screens, and 27.2 percent (CI: 26.0–28.3) reported spending five or more hours per day looking at screens. Although there were few significant differences between services in screen time, junior enlisted personnel were the most likely to report spending five or more hours per day looking at screens.

## Annual Physical Assessment

Routine medical exams are used to identify asymptomatic illnesses and provide early intervention and encourage healthy behavior. These exams have been shown both to save lives through early detection of cancer and chronic conditions and to save money. The military requires that every service member complete an annual face-to-face medical assessment. These are called Periodic Health Assessments, and they are also used to evaluate individual readiness to deploy.

The 2018 HRBS asked respondents whether they had received a routine medical checkup in the previous 12 months. *Routine checkup* was defined as a general physical exam, not an exam for a specific injury, illness, or condition. Overall, 70.3 percent (CI: 69.1–71.4) reported receiving such an assessment. Members of the Coast Guard (83.8 percent, CI: 81.6–86.0) were the most

likely to report having had a routine medical checkup in the previous 12 months; members of the Air Force (62.8 percent, CI: 61.4–64.3) were least likely to do so.

## Sleep Health

According to HP2020, sufficient sleep is categorized as at least seven hours per 24-hour period among U.S. adults 22 and older and eight hours per 24-hour period for those 18 to 21. Lack of sufficient sleep is associated with daytime sleepiness, fatigue, diabetes, cardiovascular disease, obesity, and depression.

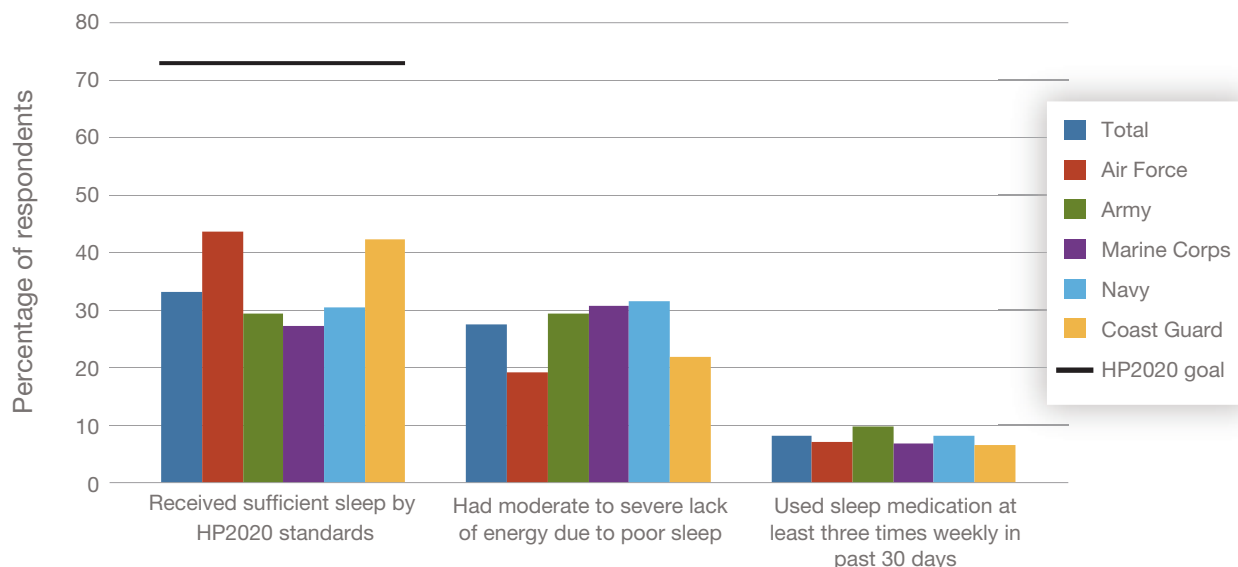
The 2018 HRBS asked respondents how much sleep they got on average in a 24-hour period over the past 30 days, how sleep affected their energy levels, and whether they took any prescription or over-the-counter medications to aid sleep. Most respondents reported getting less sleep than HP2020 recommends, with every service falling short of the HP2020 goal of 72.8 percent (Figure 3). In addition, 27.5 percent (CI: 26.3–28.6) reported moderate to severe lack of energy due to poor sleep, and 8.2 percent (CI: 7.5–8.8) reported using prescription or over-the-counter sleep medications at least three days per week over the previous 30 days.

## Use of Substances to Stay Awake

Energy supplements in the form of caffeinated beverages, over-the-counter medications, and prescription medications can boost endurance and assist with anaerobic activities. They can also have negative consequences, such as sleep loss, anxiety, and palpitations.

The 2018 HRBS asked respondents to report the frequency of past-30-day use of energy drinks, over-the-counter medications, and prescription medications to stay awake. Many active component members reported using energy drinks to stay awake. For example, 16.5 percent (CI: 15.5–17.5), reported using energy drinks at least three times weekly in the past 30 days to stay awake. Use of energy drinks to stay awake was more common in the Marine Corps than in the other services. By contrast, few reported using medications

FIGURE 3  
Sleep Health, by Service Branch



to stay awake. For example, 96.4 percent (CI: 96.0–96.9) of active component members reported never using over-the-counter medications in the past 30 days to stay awake, and 97.5 percent (CI: 97.2–97.9) reported never using prescription medications in the past 30 days to stay awake.

## Conclusions and Policy Implications<sup>2</sup>

The military is meeting HP2020 goals for normal weight. One reason it may be doing so is the prevalence of physical activity among members: Most service members exceed HP2020 goals for physical activity and strength training. Although many service members are obese by HP2020 standards, it is an open question as to how well BMI reflects physical health and conditioning for military members. As part of the revisions to physical fitness standards, DoD and the Coast Guard

should consider whether BMI is an appropriate measure of weight for service members.

Adequate sleep is an ongoing concern for service members. Difficulty sleeping and fatigue could adversely affect the readiness of service members. In addition to short-term effects on performance, poor sleep may have long-term effects on physical and mental health. This is especially important to consider in the context of tasks that require quick decisionmaking or sustained attention, both of which can be adversely affected by fatigue and insufficient sleep. DoD and the Coast Guard should make efforts to educate service members on the importance of sleep.

An annual checkup is required for all service members, but many reported not having had one in the previous year. Emphasizing these assessments represents an opportunity to address sleep and weight issues among service members and, thus, could improve the health of the force.

<sup>2</sup> Additional implications and recommendations can be found in the full report at [www.rand.org/t/RR4222](http://www.rand.org/t/RR4222).

**Limitations**

The response rate is considered low for survey research. Although low response rates do not automatically mean that survey data are biased, they do increase the possibility of bias. As with any self-report survey, social desirability bias is a possibility, especially for sensitive questions and topics. For some groups that make up a small percentage of the overall DoD population, survey estimates might be imprecise and should be interpreted with caution.

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This brief describes research conducted in the Forces and Resources Policy Center of the RAND National Defense Research Institute and documented in *2018 Department of Defense Health Related Behaviors Survey (HRBS): Results for the Active Component*, by Sarah O. Meadows, Charles C. Engel, Rebecca L. Collins, Robin L. Beckman, Joshua Breslau, Erika Litvin Bloom, Michael Stephen Dunbar, Mary Lou Gilbert, David Grant, Jennifer Hawes-Dawson, Stephanie Brooks Holliday, Sarah MacCarthy, Eric R. Pedersen, Michael W. Robbins, Adam J. Rose, Jamie Ryan, Terry L. Schell, and Molly M. Simmons, RR-4222-OSD, 2021 (available at [www.rand.org/t/RR4222](http://www.rand.org/t/RR4222)). To view this brief online, visit [www.rand.org/t/RB10116z2](http://www.rand.org/t/RB10116z2). The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. **RAND**<sup>®</sup> is a registered trademark.

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