



UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

PERSONNEL AND
READINESS

MAY 18 2023

The Honorable Jack Reed
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Department's response to House Report 117-88, page 338, accompanying H.R. 4432, the Department of Defense Appropriations Bill, 2022, "Addressing Health Barriers to Military Service," is enclosed.

The report describes existing policies within the Department of Defense (DoD) that establish the foundation and/or basis for developing the physical and nutritional fitness of a Service member to achieve and maintain operational/mission readiness. The DoD Total Force Fitness framework's eight domains serve as the organizational holistic goal for addressing the physical, mental, social, and emotional components essential for military fitness. Each Military Service has established additional policies, programs, and initiatives to effectively train Service members and create an environment to facilitate the achievement and maintenance of mission readiness.

Furthermore, the report describes the metrics used to assess the effectiveness of these efforts in recruiting or retaining Service members. It addresses the resources available to assist applicants and recruits in meeting physical fitness standards in cases where prospective applicants or recruits may be disqualified due to a failure of meeting standards; the return on investment from these efforts; and the anticipated costs of the Military Health System for treating obesity-related health conditions across military, civilian, dependent, and retiree populations.

Thank you for your continued strong support for the health and well-being of our Service members, veterans, and their families. I am sending similar letters to the other congressional defense committees.

Sincerely,

A handwritten signature in black ink, appearing to read "Gilbert R. Cisneros, Jr.", written in a cursive style.

Gilbert R. Cisneros, Jr.

Enclosure:
As stated

cc:
The Honorable Roger F. Wicker
Ranking Member



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WASHINGTON, D.C. 20301-4000

PERSONNEL AND
READINESS

MAY 18 2023

The Honorable Mike D. Rogers
Chairman
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

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Enclosure:
As stated

cc:
The Honorable Adam Smith
Ranking Member



PERSONNEL AND
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UNDER SECRETARY OF DEFENSE
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WASHINGTON, D.C. 20301-4000

MAY 18 2023

The Honorable Jon Tester
Chairman
Subcommittee on Defense
Committee on Appropriations
United States Senate
Washington, DC 20510

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cc:
The Honorable Richard C. Shelby
Vice Chairman



PERSONNEL AND
READINESS

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

MAY 18 2023

The Honorable Ken Calvert
Chair
Subcommittee on Defense
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

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Enclosure:
As stated

cc:
The Honorable Betty McCollum
Ranking Member

REPORT TO CONGRESS



House Report 117–88, Page 338, Accompanying H.R. 4432, the Department of Defense Appropriations Bill 2022, “Addressing Health Barriers to Military Service”

May 2022

The estimated cost of this report or study for the Department of Defense (DoD) is approximately \$96,000 for the 2022 Fiscal Year. This includes \$0 in expenses and \$96,000 in DoD labor.
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EXECUTIVE SUMMARY

This report is in response to the House Report 117–88, page 338, accompanying H.R. 4432, the Department of Defense (DoD) Appropriations Bill, 2022, which requests the Secretary of Defense, in coordination with the Secretaries of the Military Departments, to submit a report on existing military fitness and nutrition initiatives and campaigns. Specifically, the report requests metrics used to assess the effectiveness of these efforts in recruiting or retaining Service members; the resources available to assist applicants and recruits in meeting physical fitness standards in cases where prospective applicants or recruits may be disqualified due to a failure of meeting standards; the return on investment (ROI) from these efforts; and the anticipated costs of the Military Health System (MHS) for treating obesity-related health conditions across military, civilian, dependent, and retiree populations.

Addressing Health Barriers to Military Service

The Committee is concerned that 71 percent of Americans between the ages of 17 to 24 are ineligible for military service due to obesity, mental and other physical health conditions, or sub-stance abuse. The Committee directs the Secretary of Defense, in coordination with the Service Secretaries, to submit a report to the congressional defense committees not later than 180 days after the enactment of this Act on existing military fitness and nutrition initiatives and campaigns. The report shall include the metrics used to assess the effectiveness of these efforts in recruiting or retaining servicemembers; the resources available to assist applicants and recruits in meeting physical fitness standards in cases where potential applicants or recruits may be disqualified due to a failure of meeting standards; the return on investment from these efforts; and the anticipated costs of the military health system for treating obesity-related health conditions across military, civilian, dependent, and retiree populations.

Additionally, the Committee recognizes that federal support for childhood nutrition, food security, physical education, mental and physical health, and substance abuse prevention benefits all Americans, including those who intend to serve in the military. The Committee believes that the Department of Defense has an obligation to both ensure a ready and fit-to-fight force and to help promote the health of civilians. The Committee encourages the Secretary of Defense to coordinate with the Secretaries of Agriculture and Health and Human Services to identify ways that the Department could contribute to informing physical fitness or nutritional standards for children and young adults across the nation.

The military has established standardized metrics for measuring the medically ready force, assessing the effectiveness of military fitness and nutrition initiatives, and efforts in recruiting or retaining Service members. Metrics used for these purposes include initiatives such as recording current Service members' weight, age, gender, and where they are assigned. Each Service has established additional policies, programs, and initiatives to effectively train the Service member and create an environment to facilitate the achievement and maintenance of mission readiness. The Services provide a wide variety of resources to help new accessions and existing Service members meet these respective Service standards.

The ROI of these initiatives is a military force that is physically ready for deployment. The results indicate that anticipated costs of the MHS for treating obesity-related health conditions across military, civilian, dependent, and retiree populations are estimated at \$540.00 per adult with a body mass index (BMI) 30 per year. Additionally, DoD has participated in the White House National Action Plan on food and nutrition insecurity and diet related diseases. DoD also participates in current Federal programming from the Department of Health and Human Services (HHS) and United States Department of Agriculture (USDA) that impacts food and nutrition insecurity and coordinated efforts to address nutritional standards.

INTRODUCTION

The demands of serving in the military require that military applicants and recruits meet certain fitness criteria prior to joining and must maintain a fitness standard while serving. Physical fitness and nutritional awareness are a basic requirement of military life as military life places unique physical and nutritional demands on units and individuals. To be prepared for these demands, the Services have created a fitness and nutritional training structure through DoD wide policies. Additionally, the DoD implements an encompassed physical fitness and nutritional program entitled “Total Force Fitness (TFF) framework.” Department of Defense Instructions (DoDIs) 1308.03, 6130.05, and 1010.10 provide guidelines that measure the physical and nutritional standards of applicants and recruits who want to join the military.

DoDIs 6130.05 and 1010.10 provide information on DoD physical fitness and nutritional standards. DoDI 6130.05 establishes policies, assigns responsibilities, and provides procedures for the DoD Nutrition Committee. According to this policy the Military Services shall provide appropriate nutrition and dietary supplements education and training to Service members to ensure that they are able to make healthy lifestyle choices to maintain performance and health. DoDI 1010.10 addresses the enhancement of mission readiness, unit performance, and the health and fitness of Service members, medical beneficiaries, and civilian DoD employees through the creation of a culture that values health and fitness. DoDI 1010.10 encourages individuals and organizations to achieve optimal health by embracing these values; provides guidance regarding the procedures for implementing health promotion and disease prevention programs; supports continuous cross-sectional analysis of Military Services’ disease and injury occurrence for the purpose of conducting targeted interventions; and views sleep patterns as a key indicator of readiness. The goal is to provide strategic direction for health promotion, disease prevention, medical aspects of injury prevention, and population health goals and objectives throughout the DoD.

Department of Defense Manual (DoDM) 1338.10, “DoD Food Service Program,” provides guidance to food service facilities regarding healthy food choices offered to Service members. This DoDM provides detailed recommendations regarding menu items and food preparation and are informed significantly by the Dietary Guidelines for Americans as well as the Food Service Guidelines for Federal Facilities. DoDM 1338.10 also describes the Basic Daily Food Allowance, a method of quantifying the cost of a day of healthy food which meets the Military Dietary Reference Intakes for energy and nutrients. The Basic Daily Food Allowance relies upon the USDA Liberal Food Plan, which describes food costs for an adequate diet. Additionally, DoDM 1338.10 ties basic allowance for subsistence calculations to the USDA Moderate and Liberal food plans. The relationship between USDA descriptions of the cost of healthy foods and guidance in DoDM 1338.10 help ensure Service members are provided access to foods supplying the necessary energy and nutrients needed to meet unique military needs.

ASSESSING THE EFFECTIVENESS OF FITNESS AND NUTRITION EFFORTS

In addition to establishing policy guidance, the Services also focus on programs that are tailored to applicants and recruits meeting physical fitness and nutritional standards, both at a DoD-wide and an individual Service-level. The DoD implements an encompassed physical fitness and nutritional program entitled “Total Force Fitness (TFF) framework.” Outlined in Chairman of the Joint Chief of Staff Instruction 3405.01, the TFF Framework as the standards for the Active and Reserve Components for Service members. TFF details the framework for individuals obtain optimal health and become high-performing Service members. It consists of eight interrelated domains: physical fitness, social fitness, psychological fitness, environmental fitness, nutritional fitness, financial fitness, spiritual fitness, and medical and dental preventive fitness. This capability-based designed framework directly supports Service members’ mission readiness and their ability to execute mission essential tasks by addressing interconnected health and performance factors that are specific to the demands of Service members’ occupations and military life.

TFF is a way for commanders and Service members to think about what helps- and what hurts- their ability to perform mission-essential tasks. Military occupations place a unique set of demands on Service members. These demands are based on tasks that they perform within their assigned unit and some occupations may encompass any combination of the eight interrelated TFF fitness domains. Commanders and Service members can utilize this framework to prioritize services and programs that better support Service member performance and the provision of opportunities to bolster wellness across all TFF fitness domains.

The TFF framework provides a proactive and holistic approach to the management of mission readiness ROI from TFF relevant programs (including nutrition and physical fitness programs), otherwise the estimated impact would/could be miscalculated if other upstream drivers of mission readiness from both an individual and community perspective identified in the TFF framework are not accounted for. The need to look holistically at fitness and control for the many contributing factors of readiness is why we must account for all the variables associated with the TFF domains when assessing the marginal impact of specific military physical fitness and nutrition programs.

Advana, which is the DoD’s enterprise authoritative data management and analytics platform, provides the secure infrastructure, data storage, business intelligence, and data science tools to allow for all the disparate and wide ranging data sets covering these variables to be pulled into a joint system. As a DoD-owned and accredited cloud analytics platform, Advana can ingest, operationalize, and visualize protected health information and personally identifiable information data and create custom analytic solutions dashboards and workflows to quickly develop decision-support tools. Advana enables mission-critical decision support analytics related to the DoD workforce, Service members, and beneficiaries by integrating health and human performance data. Under the umbrella of TFF, this includes measuring readiness and resiliency to predict force losses due to disease and nonbattle injuries to optimize human performance.

The individual Readiness Prediction Model (RPM) provides the capability to translate nutrition, wellness, and other TFF fitness metrics into marginal impacts on readiness. For example, the proof-of-concept capability of the RPM, produced in a research environment, was able to identify the marginal impact of an Army Wellness Center visit on mission completion rates. Even the “dose response” while controlling for underlying health and wellness factors was computed against proposed measurable definitions of individual readiness. These measurable definitions of individual readiness enabling the RPM were validated in Joint Requirements Oversight Council Memorandum 073-18 (July 2018) following the submission of the active duty (AD) TFF Capability-Based Assessment. The Office of the Under Secretary of Defense for Personnel and Readiness was also tasked by the Secretary of Defense to leverage TFF analytics capability to inform policy changes and ensure availability of models throughout the DoD enterprise. To accomplish this, the RPM was migrated from a research environment to an operational environment; Advana. The RPM use-case was one of the original use-cases in the Advana System of Records Notice to allow the integration of Protected Health Information and Personally Identifiable Information data into that system that can provide the context for a holistic readiness-return-on-investment analysis.

Data sources targeted for the incorporation of TFF domain products into Advana for the assessment of the effectiveness of TFF programs are built into the Community Readiness Program-Open Data Dashboard (CR-ODD). The CR-ODD aggregates risk factors (i.e., measures) at the county-level from publicly available, government data sources to identify the contributions of physical fitness, nutrition initiatives and campaigns on the root causes of non-deployability. If measured at the baseline and over the course of an initiative or campaign, measures included in the CR-ODD can be used to help assess program effectiveness. This data is updated on an annual basis and thus must be tracked over a multi-year period to assess program effectiveness. The risk factors assessed include outcome measures, education measures, community health measures, preventable health measures, food measures, housing and finance measures, and addiction measures.

Data sources utilized to understand and assess the policies, programs, and environmental factors related to TFF domains include DoD manpower and personnel files, training history, and individual medical readiness data. The model uses a random forest design to produce evidence-based and data-driven analytics relevant to physical fitness, nutrition initiatives, and campaigns impacting Service member health, readiness, and performance.

Continuing to build on the TFF framework, the Building Healthy Military Communities Pilot seeks to evaluate meaningful outcomes, measures, and benchmarks demonstrating impact on force readiness outside the gate. Building Healthy Military Communities is currently partnering with the Uniformed Services University (USU) to measure retention rates, Service member readiness to deploy, prevalence of disease and non-battle injuries, and the impact of including the DoD’s perspective on participating pilot states’ State Health Improvement Boards (or equivalent). Efforts are also underway to evaluate the impact of the addition of a current military status to the Behavioral Risk Factor Surveillance System survey.

Additional military fitness and nutrition assessments evaluating the effectiveness of meeting physical fitness standards occurs at the USU Consortium for Health and Military

Performance (CHAMP). CHAMP has been at the forefront of nutritional fitness and research to advance nutrition in the DoD. Two CHAMP nutritional assessment areas in the DoD includes the evaluation of omega-3 levels and the ability of Service members to choose healthy foods.

The omega-3 index is routinely low among Service members. Recent studies of Service members revealed an average score of 3.8 percent, which is well below the recommended level of >8 percent. No Service member presented with an Omega-3 Index >8 percent. In a more recent study of Naval Cadets, the average Omega-3 Index was 4.6 percent and after Omega-3 supplementation, average values increased to 5.6 percent. Since compliance was quite low, studies substituting Omega-3 dietary supplements for omega-3 enriched foods are proposed.

Another nutrition initiative includes facilitating the ability of Service members to make healthy food choices. The Total Force Kitchen (TFK) is an education and performance optimization program whose goal is to optimize performance and overall well-being for military personnel by targeting self-efficacy and skill-building in a supportive community. Through interactive sessions, TFK participants learn knowledge and skills from a core curriculum of cooking basics, nutrition, sleep, and mindfulness. TFK can be tailored for individuals, families and or recovering Service member military populations.

The Omega-3 and TFK readiness initiatives holistically address nutrition skills and increase such knowledge for self-care. TFK provides education and resources that target key areas and align with TFF to promote performance and well-being of Warfighters, their family members, and military units through lifestyle changes. Both initiatives are existing military fitness and nutrition initiatives focused on the optimization of brain health and mental and physical performance to enable Warfighters to maintain mission readiness.

Another program that focuses specifically on performance-nutrition is the Go for Green® (G4G) initiative. This program improves the food environment where Service members live and work. G4G prompts better food and beverage selections with the aim to optimize performance, readiness, and health. It is hosted by CHAMP at USU in partnership with the Combat Feeding Division, U.S. Army Combat Capabilities Development Command Soldier Center, and Armed Forces Recipe Service.

G4G is the primary DoD nutrition program in the appropriated food system designed to maximize the quality of dietary intake and improve the readiness of our Service members. In addition to the G4G in the appropriated dining facilities, CHAMP has developed a G4G Ready-to-Use Item database for use in military food operations. Each item in the Ready-to-Use database is coded according to G4G 2.0 standardized food labelling. These standards are consistent with USDA nutrition standards.

Each branch of the military also engages in fitness and nutritional initiatives and campaigns that focus on operationally relevant physical performance requirements. These military physical fitness readiness standards are based on scientific research and were developed on both health and operational physical performance-based physical fitness requirements. Current physical fitness testing programs promote readiness by emphasizing necessary physical capabilities, minimizing injuries, and meeting Service-specific operational mission requirements.

For example, Soldiers are given an Army Pocket Physical Fitness Guide which is designed to assist Soldier in gradually improving their overall fitness while preparing for the rigors of initial military training. The Guide provides a step-by-step workout program, information on proper nutrition, and the importance of sleep. Army Public Health Center Injury Prevention Branch assesses the effectiveness of military fitness initiatives through surveys inquiring about injury (a Soldier's most current or serious injury) as well as physical activity exposure time. The Army Public Health Center (APHC) provides annual summaries from injury surveillance and on postpartum AD Soldier which provides the percentage of postpartum AD Soldier who met body composition standards and physical fitness standards.

The Army's ACTION initiative plan is to provide command emphasis to food service stakeholders across the globe. The Joint Culinary Center of Excellence at Fort Gregg-Adams, Virginia is working toward these goals as a key player in the ACTION. The program allows logistics leaders at all levels, including Army Service Component Commands, to provide feedback and information on food service around the world.

ACTION will emphasize station feeding, with different areas offering different kinds of food – for example, sandwich stations, potato bars, or pizza. Specifically, salad bars are being upgraded similarly to salad bars in commercial restaurants and are being emphasized as a better go-to food option for troops daily. The latest diet and nutrition principles come from those developed for Special Forces Soldiers. The Army is using those high-performance nutritional standards for the whole force, not just selected troops.

Navy physical fitness initiatives include the utilization of the Progressive Aerobic Cardiovascular Endurance Run test score for initial assessment during processing week of Basic Military Training (BMT); Recruit Division Commander Assessment during the fourth week of BMT; and the Official Physical Fitness Assessment on the sixth week of BMT.

The Navy also implements a year-round Physical Fitness Program using a holistic approach to overall wellness via exercise, nutrition, physical and mental health, and weight control education. The primary focus is to maintain and assess Navy physical fitness creating a Culture of Fitness. For those Sailors struggling to meet Physical Fitness Assessment standards, the Fitness Enhancement program is a command-wide program offered to improve fitness and nutrition habits.

The Official Navy Physical Fitness Assessment app provides Sailors with all the Physical Readiness program information they need to maintain optimal health, fitness, and readiness per Navy standards. The app offers current guidance regarding all aspects of the Navy's Physical Readiness Program, including information on appropriate nutrition, health, aerobic capacity, muscular strength, muscular endurance, and body fat composition.

Additionally, the TFF Document Change Recommendation highlights the importance of the military nutrition environment in human performance optimization. The Navy implemented Choosing Health Options for Wellness in 2005 to assess the availability of healthy food choices. Since then, all the Services have come together to agree on the military Nutrition Environment Assessment Tool (mNEAT).

The Military Nutrition Environment Team conducted 1-day site visits in June 2022 with five pilot locations as part of the USU/CHAMP-led mNEAT research study. Pilot sites represented Air Force, Army, Marine Corps, and Space Force installations, along with a joint base. The team also conducted a feedback session with the local study team, collaborators, and observed Military Nutrition Environment interventions and general and proposed or active action plan implementation.

Each study team completed mNEAT at their installation between January and March 2022 as a baseline assessment, enabling a better understanding of their local nutrition landscape. Study teams experienced with conducting the mNEAT varied from none to several years, where previous versions of the tool were utilized. Regardless of mNEAT experience, all study teams were familiar and attuned to their local military community. The teams conducted the initial assessment by direct entry of information into the web-based application via the study-provided tablet or transferring from the handwritten worksheet into the app. The teams either observed all venues together or divided, amongst team members, and completed all assessments in a short period of time- or spaced-out assessments over a longer period.

Both the research and study teams identified opportunities to improve access and availability of nutritious food and beverage options. Suggestions included: moving nutritious foods to eye level in coolers and on shelves (minimal cost and effort); increasing options in non-traditional venues (micro-markets, food trucks, grab and go); adding more lower/no-sugar or calorie beverage choices; increasing education for patrons on high-performance options (print, social media, collaboration with installation organizations); implementing installation-wide or area specific (e.g., worksite) food policy or philosophy.

Study metrics will be fully analyzed, and results will be shared with study teams. CHAMP anticipates that de-identified results, summaries, themes, and key takeaways will be presented at the DoD Food & Nutrition Subcommittee meeting.

The United States Marine Corps Physical Fitness Program provides a comprehensive approach to total fitness, and consists of instructional periods on health, wellness, fitness, nutrition, flexibility, injury prevention, rest, and recovery. The program also includes prescribed periods of aerobic and anaerobic physical activity intended to increase the endurance, strength, mobility, and resiliency of individual Marine and the unit.

Next, the Air Force also uses BMT attrition rates and Force Support Squadrons to provide monthly assessment statistics to the wing commander, unit commander, or designee of the Surgeon General of the Air Force and has used this information to develop an intervention training policy and guidance that is related to the medical aspects of this fitness program. The 559th Medical Group, Trainee Health Surveillance, Versatile Injury Prevention and Embedded Reconditioning (VIPER) clinic, and 37th Training Wing also tracks physical training (PT) test scores, on-time graduation, delays in training, med holds, and separation due to fitness concerns. This data can be obtained from eBMT, the Armed Forces Health Longitudinal Technology Application, Medical Hold, Training Health Optimization Report, Entry Level Separation lists, Trainee Health Surveillance and VIPER registries. The information is then compiled from basic military trainees and technical training that occurs at Lackland Air Force Base.

Furthermore, the Special Warfare Training Wing, VIPER, and Trainee Health Surveillance also track PT test scores, on-time graduation, delays in training, med hold and separation due to fitness concerns, vital signs, injuries, and BMI. This data can be obtained from the Armed Forces Health Longitudinal Technology Application and Special Warfare (SW) data repositories. Information is compiled from trainees in SW courses.

The Air Force also implements a year-round Physical Fitness Program with a goal of motivating all members to participate in a year-round physical conditioning program that emphasizes total fitness, to include proper cardiorespiratory conditioning, muscular endurance training, and healthy eating. An active lifestyle increases productivity, optimizes health, and decreases absenteeism while maintaining a higher level of readiness. Force Support Squadrons provide monthly assessment statistics to wing commander, unit commander or designee. These reports provide fitness assessment status by unit and currency.

The Human Performance Resource Center offers Service members resources on a variety of topics such as performance nutrition, total force fitness, PT and performance and injury prevention. With evidence based, operationally relevant information provided by USU and CHAMP, this website is designed to support the health of the force.

RESOURCES AVAILABLE FOR MAINTAINING FITNESS STANDARDS

Service members and recruits who fall below Service-required fitness standards are placed in remedial programs that prescribe PT/exercise activities, nutritional, and behavioral counseling in accordance with medical guidance. Service members are referred to medical authorities for evaluation upon entry in remedial training, and medical evaluation provides recommendations for continued PT, or specifies medically limiting circumstances.

Each Military Department provides resources for applicants and recruits with guidelines on how to maintain fitness standards. For example, the Army provides information on fitness standards, including nutrition, in its Future Soldier Training Program for recruits (via Army Pocket Physical Fitness Guide noted above); includes instruction on fitness and nutrition in its Drill Sergeant curriculum; and includes instruction on fitness and nutrition to recruits in its basic combat training course. It incorporates the G4G initiative, described above, in its dining facilities. It includes “nutrition readiness” as part of its physical readiness training program, which is required training. It has the Performance Triad Army Wellness Center Website that has information on general wellness target, Soldier Athlete targets, and Fit for Performance that provides weight management strategies by registered dietitians and/or health professionals for Soldiers looking to achieve a healthy weight or who have been flagged according with Army Regulation 600-9 (The Army Body Composition Program).

Similarly, the Navy’s Sailorization Toughness Evaluation Preparation program provides additional explanations/instructions on execution of physical fitness test, followed by three additional attempts at the Progressive Aerobic Cardiovascular Endurance Run test if the standards are not met upon entry.

Another Navy program is the Physical Remediation Evaluation Program which is a remedial program that provides three additional cardio events per week for a Recruit's remaining time within the BMT. The Physical Remediation Evaluation Program is designed to improve Recruits' physical fitness if the standards are not met on Recruit Division Commander Assessment or Official Physical Fitness Assessment.

Furthermore, the Naval Health Research Center's Food Utilization and Energy Laboratory (FUEL) Research program. FUEL leverages the "CoachMePlus" (CM+) application in Delayed Entry Program pilot with expansion project. CM+ was piloted to deliver nutrition education, PT, and general military training. The pilot examined 110 future sailors in Navy Recruiting Command Delayed Entry Program to determine whether CM+ is a viable tool to improve physical and mental readiness for Recruit Training Command, translating to decreased attrition. The pilot project demonstrated the benefits of deploying dietitian on ship on health outcomes and operational readiness.

The Naval Health Research Center's FUEL Research program is conducting research on the CM+. CM+ was piloted to deliver nutrition education, PT, and general military training. The pilot examined 110 future sailors in Navy Recruiting Command Delayed Entry Program to determine whether CM+ is a viable tool to improve physical and mental readiness for Recruit Training Command, translating to decreased attrition. The pilot project demonstrated the benefits of deploying dietitians on ships to foster better health outcomes and operational readiness.

Recruiters indicated the CM+ application was easy to use and provided valuable, real-time feedback. Future Sailors found the application easy to use and useful for General Military Training/Nutrition education with weekly check-ins. The program has expanded in Q1 of FY 2023 with 1,000 Future Sailors registered and will continue through Q2 of FY 2023 within the Naval Recruit Command Delayed Entry program, with the goal to determine whether CM+ is a viable virtual recruiting tool to improve physical and mental readiness for Recruit Training Command, translating to decreased attrition in a larger population.

Next, the Marines implement the Recruit Training Combat Conditioning program that is designed to achieve and maintain physical fitness, endurance, proper body composition, and promote the concept of fitness and wellness as a way of life. The Recruit Training Combat program consists of 70 days of training that is divided into four phases. It is a progressive program that is designed to build upon basic mental, moral, physical, and cultural competencies.

Semper Fit's program focus is to provide total person health, wellness, and performance programming for Marines, Sailors, and their families. Programs include Strength & Conditioning/Fitness, Aquatic Conditioning & Performance, Nutrition Education and Skill Development, Sleep and Performance Education, Sports Medicine and Injury Management, Applied Mental Skills and Cognitive Performance, Intramural, Youth, and Adventure Sports programming, Community and Deployment Support, and Single Marine/Service member programs. This battery of integrated, research based, and prevention focused capabilities work to support Marine and family health, wellness, and performance in all domains of fitness.

Together, the Semper Fit programs enable readiness, improve capability, and support resilience throughout a lifetime of service for individuals, units, and families.

The Marines also have a Special Training Company and a Sports Medicine Injury Prevention. The purpose of the Special Training Company in the Support Battalion at each Marine Corps Recruit Depot conducts physical conditioning for recruits who are unable to meet the physical fitness standards necessary to continue training. The intention of this program is to improve their fitness with the goal of allowing them to return to training. The mission of the Sports Medicine and Injury Prevention Program is to decrease attrition and lost training time that is associated with musculoskeletal injuries by utilizing Certified Athletic Trainers in the PT area and through injury surveillance.

The Air Force Recruiting Service developed the Aim High application (app) which provides information on Air Force recruiting, BMT and Officer Training School. The app includes basic level stretching, running, push-ups and sit-ups in preparation for BMT. The app also provides detailed information on fitness plans, physical activity routines/drills, current Air Force physical standards with PT calculator, and nutrition. The Air Force has an additional app called the Delayed Entry Program app. The app provides a 14-week prep/basic fitness training schedule that prepares a recruit for BMT. Once the recruit is prepared for a fitness assessment, the app offers an intermediate level training program that mimics the PT experience during BMT and includes aerobic, strength, and cardio interval training by BMT training week.

The 37th Training Wing has an embedded multidisciplinary Sports Medicine Clinic, VIPER, which supports BMT, Special Warfare/BMT SW, and Security Forces Technical Training. The team includes Sports Medicine physicians, Physical Therapist, Athletic Trainers, Exercise Physiologist, Epidemiologist, and Registered Dietitians. VIPER's goals include increased on-time graduation, reduced injury, and trainee performance optimization. Programs included are 1:1 coaching, gait training from strength/conditioning coaches and athletic trainers, treatment for medical causes of poor physical performance (e.g., low iron, anemia, etc.), and optimization of nutrition/performance for recruits with nutritional deficiencies (e.g., Vitamin D deficiency, etc.) and low/high BMI.

The Special Warfare Training Wing has an established Human Performance Support Group with the goal of developing more physically fit, mentally resilient, and tactically capable force which is better prepared to sustain the rigors of ground combat. The multidisciplinary team includes Sports Medicine providers, Athletic training, Occupational therapy, Physical therapy, Strength and conditioning specialist, Performance nutrition, Operational psychology, Preventive medicine/first line therapy/occupational medicine, Independent Duty Medical Technicians/paramedics, and Research support. Programs also include injury prevention, rehabilitation, optimization of nutrition/performance, and tracking and analysis of data to develop injury prediction models.

The Air Force also provides a tool to help maintain nutritional standards. Nutrition Kitchen videos provide a series of free online nutritional cooking videos that launched through the Air Force Medical Service in June 2022. Research performed by Air Force Endocrinologists and Registered Dietitians determined that Active-Duty Service members and spouses desire free

online nutritional cooking videos more than any other form of nutrition resources. A large multidisciplinary team spent 5 years developing the videos with incorporation of feedback from active duty Service members (ADSMs). Nutrition Kitchen provides several options to improve the nutrition of common recipes (e.g., peanut butter and jelly, cereal, pancakes, tacos, spaghetti, and pizza). The Nutrition Kitchen resource is a valuable tool for all healthcare professionals to use in incorporating nutritional improvements for their own health and that of their patients.

ROI FROM FITNESS AND NUTRITIONAL EFFORTS

All DoD efforts related to implementing physical and nutritional programs, increase the return of investment on Service members always being mission ready. There is time, money, and research that goes into recruitment and training to ensure that applicants, recruits, and Service members have the support and resources necessary to achieve optimal physical and nutritional goals (APHC, 2020).

Providing applicants, recruits, and Service members with the necessary support and resources increases their overall health, performance, and combat readiness. Service members that are at their optimal levels of health are less likely to suffer from mental health issues and obesity, practice better nutritional behaviors, have better sleeping habits, have more energy, have increased durability and endurance, increased proprioception, speed, agility, power, strength, confidence, teamwork, cardiovascular function, cognitive function, social health, and spiritual health.

Applicants, recruits, and Service members without the proper tools necessary to become physically fit, may experience increased attrition due to suboptimal fitness levels resulting in musculoskeletal injuries. Such under-prepared Service members are also at an increased risk of reoccurring musculoskeletal injuries and may not adequately recover post injury. These Service members may become medically compromised and subsequently non-deployable impacting mission readiness.

Reoccurring injuries would also keep recruits in a Light/Limited Duty status for longer periods of time, some of which may result in medical separation. If the programs listed were not implemented, the increased attrition rates would therefore negatively impact manning and operational readiness for Service members.

ANTICIPATED COST FOR TREATING OBESITY-RELATED HEALTH CONDITIONS

The prevalence of obesity has risen, leading to greater interest in a better understanding of the medical care costs of obesity. Studies in the civilian sector, using various research methods and data sources, have indicated that individuals with obesity have higher medical care costs than those without obesity. According to the Centers for Disease Control and Prevention, obesity costs the U.S. healthcare system nearly \$173 billion a year.

Due to challenges associated with data availability, data limitations, and controlling for population demographics (e.g., age, gender, race/ethnicity), cost analysis associated with obesity

leverage complex statistical models to account for data variability. Additionally, data collection, review, exploratory analysis, computational analysis, statistical analysis, and quality control analysis often take substantial time to instill confidence in results. The MHS's TRICARE health plan serves approximately 9.6 million beneficiaries around the world. Consequently, the DoD is afforded access to a large population to establish a sample size for a control and test cohort, promoting comparison via more simplistic computational analysis required. This method was leveraged for this report due to the abbreviated study timeline in response to report requirements.

To assess the anticipated impact to the MHS for treating obesity-related health conditions across military, civilian, dependent, and retiree populations, a cost analysis was performed on adults (aged 18 years and older) on two cohort populations (Control vs. Test) consisting of beneficiary categories ADSMs, active duty family members (ADFM), National Guard/Reserve (NGR) Active and Inactive, NGR family members, and retirees and family members.

The Control and Test cohorts excluded specific outlier situations and conditions. This data scrubbing process allowed for greater data integrity within the study. Individuals with a pregnancy within 24 months of the study end period were excluded. Patient outliers with weights outside the range of 70 – 500lbs were excluded on the basis such data is either an outlier or inaccurate coding. Individuals enrolled to MHS Genesis sites were excluded on the basis cost of care cannot be accurately calculated at the time of this study. Individuals with other health insurance were excluded to obtain consistent cost calculations across both populations.

The Control cohort included individuals with a BMI 18.5 – 25.0. The Test cohort included individuals with a BMI >30. Individuals were categorized into the Control or Test cohort via International Classification of Diseases codes for “normal” or “obese” BMI or through BMI calculation, leveraging data from the Clinical Data Repository (CDR) Vitals. BMI was calculated by employing an algorithm to height and weight records in CDR Vitals, enabling a more accurate data capture than International Classification of Diseases codes alone. Of note, leveraging data from CDR Vitals can affect the sample size and population distribution of the cohorts, as values captured in the data system are only representative of patients accessing care through direct care facilities (e.g., cohorts disproportionately comprised of ADSMs). However, this analysis established proper controls described below to mitigate these and other challenges.

For this analysis, individuals with a BMI classified as “overweight” (25.0 – 29.9) were omitted. High fitness levels and high non-fat mass may be misclassified as “overweight” when assessed by weight-for-height or BMI standards alone. As a result, ADSMs and NGR individuals with a BMI in this range may be incorrectly assigned to the “overweight” category. Further, misclassifications of BMI may be compounded in the female populations, as data have indicated that females with exceptional physical fitness may not be correctly assessed with BMI methods. Thus, due to their high fitness levels, many of the individuals mentioned in this paragraph may be incorrectly assigned to the “overweight” category, creating bias in the analysis.

This analysis was performed on three consecutive calendar years (CYs), 2017-2019, assessing individuals with 36-month continuous eligibility. CY 2020 and 2021 were omitted due to bias and inconsistencies in care that may be a result of the coronavirus disease 2019

pandemic. Individuals included in the analysis were required to be TRICARE eligible for all three CYs to enable accurate analysis. The total adult TRICARE population demographic was assessed for population distribution, and a sub-analysis was performed to identify the population distribution of the TRICARE population with continuous 36-month eligibility. The Control and Test cohorts were developed to match the gender (male/female), age (18-24, 25-34, 35-44, 45-54, 55-64, and 65+), beneficiary category (ADSM, ADFM, NGR, NGR family member, retirees, and family, and other), and race/ethnicity (e.g., non-Hispanic black, non-Hispanic white, Hispanic) of the 36-month eligible population demographic.

After applying the population distribution, 36-month eligible population distribution, population matching, and BMI criteria, the Control and Test populations comprised 83,019 and 84,429 individuals, respectively. Establishing a large, matched sample size for the cohorts mitigated variability associated with population demographics and enabled simple computational assessment rather than complex statistical analyses.

For each cohort, medical management and treatment costs were captured for the Direct Care and Private Sector Networks. This includes, but is not limited to routine and preventive care, specialty care, and medical services captured in the MHS Data Repository database. Additionally, total pharmacy costs for each cohort were captured to enable an accurate assessment of anticipated costs for treating obesity-related health conditions.

As expected, the test cohort exhibited higher costs for both medical care and pharmacy. The per year average increase in costs based on three years of data was estimated at \$540/person, which included \$290/person for medical care and \$250/person for pharmacy. The additional costs of medical care from the test cohort ranged from approximately \$270-\$310. The additional pharmacy costs ranged from \$105-\$375 per year, with the largest increase occurring from 2017 to 2018 (~\$170). The dramatic increase in pharmacy costs from 2017 to 2018 could be attributed to multiple factors, including but not limited to increased prescription coverage, increased number of prescriptions being written or filled, exclusivity of medications, or formulary costs for newer versions of medications.

This analysis enables confidence in results based on the ability to assess change in costs with a matched population across two distinct cohorts. The methodology and analysis were constructed and performed in a limited timeframe and are subject to the same inherent challenges and limitation as any study performed in a similar timeframe using medical billing data. Results may be affected by data system limitations and accuracy and completeness of coding. Additionally, beneficiaries in this study have access to care at military medical treatment facilities (Direct Care) and in the private sector, and coding errors may occur in either system.

The results indicate that anticipated costs of the MHS for treating obesity-related health conditions across military, civilian, dependent, and retiree populations are estimated at \$540 per adult with a BMI > 30 per year in comparison to individuals with a BMI from 18.5 – 25.0. Future analysis may involve including beneficiaries under 18 years of age, additional CYs, the mean number of individuals with a BMI > 30 at any given year, and a comparison with a third, “fit or overweight,” cohort (BMI 25.0 – 29.9).

INFORMING PHYSICAL FITNESS OR NUTRITIONAL STANDARDS FOR CHILDREN AND YOUNG ADULTS

In response to the most challenging recruiting environment since the start of the All-Volunteer Force in 1973, the Army is implementing an innovative new program to prepare recruits who are en-route to initial military training to meet or exceed our rigorous standards.

The Future Soldier Preparatory Course (FSPC) pilot program, which started in early August at Fort Jackson, South Carolina, is an investment in America's youth to help them overcome academic and physical fitness barriers to service so they can earn the opportunity to join the Army. The U.S. Army has already identified approximately 2,000 applicants who may be eligible to participate in the course. The Army will initially run the FSPC as a pilot program and will review results in the early part of FY 2023 to determine if the course was effective and should become permanent.

The pilot program will provide focused academic and fitness instruction to help recruits meet the Army's desired accession standards for body fat composition and academic test performance prior to basic training. Access to this program will allow these individuals who already meet all other qualifications for enlistment, to include moral and medical accessions standards, a path to serve. Recruits admitted through this program will all be required to ultimately meet DoD enlistment standards to ensure we maintain the overall quality of the force.

The FSPC pilot course includes two separate tracks: a fitness program and an educational program for recruits who need help improving their scores on the Armed Forces Qualification Test. Recruits with an Armed Services Vocational Aptitude Battery score of 21-30 may only participate in the academic track. Recruits with an Armed Services Vocational Aptitude Battery score between 42-49 may be allowed to voluntarily participate in both tracks, the fitness portion prior to basic combat training and the academic portion following basic training.

Individuals in the fitness program will ship to basic training once their body fat composition percentage is no more than 2 percent above the accession standard, based on gender, age and height/weight. All individuals will have already qualified for their military occupational specialty (MOS) by taking the gender-neutral Occupational Physical Assessment Test before arriving at the FSPC.

The fitness course is an expansion of the current Assessment of Recruit Motivation and Strength (ARMS) 2.0 program. Under the current ARMS 2.0 program, the Army has already enlisted more than 1,200 recruits who were up to 2 percent above the accession body fat standards, based on gender, age and height/weight. These recruits shipped straight to basic training, were closely tracked throughout their enlistment, and ultimately subject to existing Army physical fitness standards. To date, less than 1 percent of recruits who were already accessed under ARMS 2.0 have been separated from the Army for body fat composition.

With the expansion of ARMS 2.0, recruits who exceed the accession body fat composition standard by greater than 2 percent but no more than 6 percent will attend the fitness

track of the FSPC. They will be educated on the five Holistic Health and Fitness (H2F) domains (physical, mental, nutrition, sleep, and spiritual) supported by H2F professionals, to include dietitians, physical therapists, occupational therapists, strength and conditioning coaches, athletic trainers, and behavioral health specialists. The program is designed to improve their overall health, physically and mentally prepare them for basic training, and ultimately improve their health in the long term so they can successfully serve their country.

To ensure individuals have enough time to safely manage their body fat, they will have 1 year from accession onto AD to meet the Army's post-accession body composition standards. Recruits accessioning into the Army National Guard or Reserve must meet post-accession body fat composition standards no later than 1 year after starting Initial Active Duty for Training.

The Junior Reserve Officers' Training Corps (JROTC) is a voluntary elective course in many high schools across the United States as well as DoD schools operating on American military bases outside of the United States. This is an elective course for all grade levels that focuses on inspiring better citizenship through leadership, character, and educational development. JROTC cadets are taught by qualified military personnel and learn subjects such as leadership, civics, geography, U.S. history, military science and history, health and physical fitness, global awareness, time management, financial planning, critical thinking, life skills, core values, self-discipline, and community responsibility. Many students join JROTC, but it is not a program intended for military preparation (Operation Military Kids).

College students also can participate in a program such as this. The Reserve Officers' Training Corps (ROTC) is a college program offered at colleges across the United States. that prepares students to become officers in the U.S. military. Students receive paid college education and guarantee post-college career, participants, or cadets, commit to serve in the military after graduation. Each Service branch has its own ROTC program with variations in the physical fitness requirements (Military.com Network).

Army Reserve Officers' Training Corps (AROTC) is one of the most successful and demanding ROTC programs in the country. The AROTC program provides leadership development, military skills, physical fitness, and career training. The physical fitness test consists of 1-minute push-ups, 1-minute curl-ups, and a 1-mile run. The test is conducted by a variety of individuals but is usually done by a physical education teacher. The AROTC physical fitness test is worth 10 percent of the overall point total for the scholarship (Military.com Network).

The Naval Reserve Officers' Training Corps (NROTC) is annually the commissioning source of approximately one third of the Navy's unrestricted line officer accessions and 16 percent of Marine Corps officer accessions and plays an important role in the development of post-secondary students to succeed in leadership and management positions in the Navy and Marine Corps. Offered at colleges across the United States, the NROTC program provides military, leadership, and ethical training. For Navy-option applicants to NROTC, an Applicant Fitness Assessment consisting of a timed plank, 2-minutes of timed push-ups, and a 1-mile run plays a role in obtaining a scholarship; worth approximately 5 percent of the overall criteria for awarding a scholarship. This fitness test can be conducted by a high school official such as a

gym teacher or coach. The NROTC Marine Corps Physical Fitness Test consists of performing “dead-hang” pull-ups to exhaustion, a plank to exhaustion, and a 3-mile run. The test is typically given at a Marine Corps recruiting station when applicants are initially processed for a scholarship. The physical fitness tests are reviewed as one of many components of the scholarship application, including a personal statement, academic performance.

The Air Force Reserve Officers’ Training Corp’s (AFROTC) mission is to produce leaders for the Air Force and build better citizens for America. This program is for college students across the United States and is offered at 3- or 4-year program options. AFROTC includes a mix of normal college courses, leadership studies, physical fitness, and combat technique. The AFROTC physical fitness test consists of 1-minute of push-ups, 1-minute of sit-ups, and a 1-mile run. The test is worth 5 percent of the overall point total for the scholarship. The AFROTC physical test can also be conducted by a high school official such as a gym teacher or coach (Military.com Network).

DoD AGRICULTURE AND HEALTH AND HUMANS SERVICES COLLABORATIVE NUTRITION EFFORTS

The White House National Action Plan strategy, “Current Federal Programming and Coordination Efforts Related to Food and Nutrition Insecurity and Diet-Related Diseases,” released at its September 28, 2022 Conference on Hunger, Nutrition, and Health outlined current Federal programming that directly or indirectly impacts food and nutrition insecurity and diet-related diseases as well as efforts to coordinate across Federal agencies and between Federal agencies and Tribal, State, and local governments. DoD, HHS, and USDA coordinated efforts addressing nutritional standards are included the report.

To improve food access and affordability, DoD utilizes USDA Supplemental Nutrition Assistance Program and USDA Special Supplemental Nutrition Program for Women, Infants, and Children programs.

To empower all consumers to make and have healthy choices, DoD utilizes the HHS and USDA co-developed Dietary Guidelines for Americans (Dietary Guidelines) as guidance to provide advice on what to eat and drink to meet nutrient needs, promote health, and prevent disease. DoD also benefits from incorporating the Centers for Disease Control and Prevention developed Food Service Guidelines for Federal Facilities standards for healthier food and beverages and food service operations in worksite and community settings that aim to contribute to health and wellness, strengthen local food systems, increase energy efficiency, change social norms, and/or reduce environmental impact.

CONCLUSION

In conclusion, DoD policies establish the foundation and or basis for developing the physical and nutritional fitness of a Service member to achieve and maintain operational/mission readiness. The DoD TFF framework's eight domains (physical fitness, environmental fitness, medical and dental fitness, nutritional fitness, spiritual fitness, behavioral fitness, environmental fitness, and social fitness) serve as the organizational holistic goal for addressing the physical, mental, social, and emotional components essential for military fitness. Each Service has established additional policies, programs, and initiatives to effectively train the Service member and create an environment to facilitate the achievement and maintenance of mission readiness. The Services provide a wide variety of resources to help new accessions and existing Service members meet these respective Service standards.

The military has established metrics to assess the effectiveness of these efforts in recruiting or retaining Service members and has developed resources to assist applicants and recruits in meeting physical fitness standards in cases where prospective applicants or recruits may be disqualified due to a failure of meeting standards.

The ROI of these initiatives is a military force that is physically ready for deployment. The results indicate that anticipated costs of the MHS for treating obesity-related health conditions across military, civilian, dependent, and retiree populations are estimated at \$540 per adult with a BMI > 30 per year.

As indicated in the White House National Action Plan strategy released, DoD participates in current Federal programming from HHS and Agriculture that impacts food and nutrition insecurity and coordinated efforts to address nutritional standards.

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APPENDIX: LIST OF ACRONYMS

ACRONYM	DESCRIPTION
AD	active duty
ADFM	active duty family member
ADSM	active duty Service member
APHC	Army Public Health Center
ARMS	Assessment of Recruit Motivation and Strength
AROTC	Army Reserve Officers' Training Corps
BMI	body mass index
BMT	Basic Military Training
CDR	Clinical Data Repository
CHAMP	Consortium for Health and Military Performance
CM+	"CoachMePlus"
CR-ODD	Community Readiness Program-Open Data Dashboard
CY	calendar year
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
FSPC	Future Soldier Preparatory Course
FUEL	Food Utilization and Energy Laboratory
G4G	Go for Green®
H2F	Holistic Health and Fitness
HHS	Department of Health and Human Services
JROTC	Junior Reserve Officers' Training Corps
MHS	Military Health System
mNEAT	Military Nutrition Environment Assessment Tool
MOS	military occupational specialty
NGR	National Guard/Reserve
NROTC	Naval Reserve Officers' Training Corps
PT	physical training
ROI	return on investment
ROTC	Reserve Officers' Training Corps
RPM	Readiness Prediction Model
SW	Special Warfare
TFF	Total Force Fitness
TFK	Total Force Kitchen
USDA	United States Department of Agriculture
USU	Uniformed Services University
VIPER	Versatile Injury Prevention and Embedded Reconditioning