

# GAO Highlights

Highlights of [GAO-17-431](#), a report to congressional committees

## Why GAO Did This Study

Army and Marine Corps ground combat personnel have long worn a variety of PPE such as vests, armor, and helmets to help protect them from operational risks. The two services have documented the advanced protection capabilities of current PPE systems, but identified that the armor contributes to the total load burden—or cumulative weight of items typically worn or carried. In addition to PPE, personnel typically carry food, water, ammunition, communications equipment, and other items.

House Report 114-537, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2017, included a provision for GAO to review Army and Marine Corps efforts to reduce the weight of PPE and other equipment worn or carried in combat.

This report describes (1) the current operational requirements associated with PPE, and how those requirements contribute to the total load burden on Soldiers and Marines in combat environments; and (2) the coordination between the Army and the Marine Corps regarding efforts to reduce the weight of PPE and the total load burden on personnel.

GAO reviewed Army and Marine Corps documentation related to PPE, total load burden on combat personnel, and weight reduction initiatives; and interviewed service researchers and program officials.

## What GAO Recommends

GAO is not making recommendations in this report. DOD provided technical comments on a draft of this report, which GAO incorporated as appropriate.

View [GAO-17-431](#). For more information, contact Cary Russell at (202) 512-5431 or [russellc@gao.gov](mailto:russellc@gao.gov).

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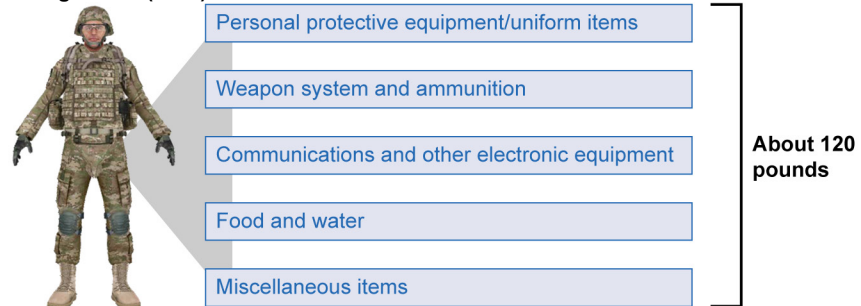
## PERSONAL PROTECTIVE EQUIPMENT

### Army and Marine Corps Are Pursuing Efforts to Reduce the Weight of Items Worn or Carried in Combat

## What GAO Found

The Army and Marine Corps have developed requirements for personal protective equipment (PPE) to address operational threats in ground combat environments, but this PPE has increased in weight over time and has added to the total load burden on personnel. PPE primarily consists of hard armor plates, soft armor plate carrier vests, and combat helmets. Army and Marine Corps officials stated that the PPE provides significant additional protection when compared with equipment used prior to operations in Iraq in the 2000s. However, they also noted that providing this level of protection adds significant bulk and weight to the total load on Soldiers and Marines, which could impede mobility and hinder combat effectiveness. According to service-provided data, the typical total load in 2016 for Army and Marine Corps ground combat personnel averaged about 119 and 117 pounds, respectively, of which the primary PPE represented about 27 pounds based on equipment sizes (see figure). Officials stated that these totals have increased over time based on the incorporation of new PPE and other equipment.

**Army and Marine Corps Ground Combat Personnel Total Load Contributors and Approximate Average Load (2016)**



Sources: © 2015 Filo LLC (image); GAO analysis of Army and Marine Corps data. | GAO-17-431

Recognizing that the weight of PPE and other equipment could have negative effects on personnel performance, the Army and the Marine Corps have coordinated and developed goals for PPE-related weight reductions and are pursuing some efforts to reduce overall load burdens on personnel. The two services coordinate through formal working groups and informal methods to develop and improve PPE. Army and Marine Corps officials stated that while they prioritize protection and operational capabilities when developing PPE, they have overarching goals of reducing weight, in addition to improving the form, fit, and function of equipment. These goals have led to reductions in the weight of some PPE. The Army is also developing a goal and plan to reduce the weight of hard armor plates by 20 percent by identifying and eliminating excess ballistic protection. In addition, the Army and Marine Corps are pursuing other efforts to reduce the weight of PPE, such as by giving commanders the option to employ varying levels of PPE at their discretion and studying the effects of integrating PPE with overall combat loads. Finally, the Army and Marine Corps are exploring research initiatives that may reduce the total load on ground combat personnel, such as improvements to logistics and aerial delivery capabilities, load transferring systems, and other enhancements to equipment.