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# Body Mass Index: U.S. Army Considerations

## What is body mass index (BMI)?

Body mass index (BMI) is a quick, inexpensive, scientifically accepted screening measurement for assessing healthy body weight among large populations.

BMI is an indirect estimate of body fat for males and females based on height and weight. BMI is calculated by dividing weight by height squared and can be determined using either metric (weight (kilograms) / [height (meters)]$^2$) or non-metric measurements (weight (pounds) / [height (inches)]$^2$ x 703).

Determine your own BMI and Body Fat:

- BMI calculator and civilian risk categories: https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm
- U.S. Army height and weight requirements: https://www.armyresilience.army.mil/abcp/pdf/ARN7779_AR600-9_FINAL.pdf
- U.S. Army body fat calculator: https://www.armyresilience.army.mil/abcp/BodyFatCalculator.html

BMI does not diagnose the body fatness or health of an individual. BMI calculations result in population-level estimates that are correlated to more direct body fat measures such as dual x-ray absorptiometry (DXA). These classifications apply to both males and females >20 years old and correspond to obesity levels and the associated increased risk of developing diseases such as type-2 diabetes, heart disease, high blood pressure (hypertension), and some cancers.

Medical and occupational communities often use BMI as a screening tool for body fat estimation. Public health organizations (e.g., Centers for Disease Control and Prevention (CDC)) use BMI to evaluate obesity trends and to predict long-term health impacts and death rates for the general U.S. population.

## What are concerns and limitations with BMI?

Using BMI as a body fat screening tool has the following limitations:

- BMI does not measure fat distribution, so it cannot be used to identify those at greater risk of developing certain cardiometabolic diseases.
- BMI does not account for skeletal muscle mass or bone density. A very muscular person and a non-muscular person of the same weight and height will have the same BMI.
- On average, females have a greater amount of body fat compared to males with an equivalent BMI.[1]
- BMI alone for health-related risk stratification may not be appropriate for all races or ethnicities.[2]
- More precise measurements, such as DXA, InBody 770 or the BOD POD, can be used to better assess body composition.

## How does the U.S. Army use BMI?

To perform military duties successfully while limiting injury risk, the Department of Defense (DoD) requires all U.S. Service members to maintain aerobic capacity, muscular strength, muscular endurance, and optimal body composition according to their Service-specific requirements, missions, and military specialties. Each Service maintains procedures and standards to identify persons with a higher BMI during entry (accession) and to monitor Service members regularly to ensure compliance.

The U.S. Army uses weight-for-height standards (e.g., BMI equivalent) for initial body composition screening when routinely monitoring Soldiers' health and fitness every 6 months.[3,4] U.S. Army standards, which differ slightly from the CDC BMI classifications (see table), address potential BMI changes associated with the aging process occurring from the early 20s through the 50s.[2]

### CDC BMI Categories and U.S. Army Standards

| Centers for Disease Control and Prevention | | Underweight BMI <18.5 | Healthy BMI 18.5–24.9 | Overweight BMI 25.0–29.9 | Obese BMI ≥30.0 | |
|---|---|---|---|---|---|---|
| U.S. Army | | Minimum BMI | Maximum BMI (17–20y) | Maximum BMI (21–27y) | Maximum BMI (28–39y) | Maximum BMI (40y+) |
| | Males | 19.0 | 25.8 | 26.4 | 27.1 | 27.5 |
| | Females | 19.0 | 24.9 | 25.2 | 25.5 | 26.0 |

Note: If Soldiers do not meet the BMI equivalent standards, the U.S. Army Body Fat Circumference-Based Tape Test is used, or the Soldier may choose to use a more precise body fat assessment such as DXA, InBody 770, or the BOD POD.[5]

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## Why should the U.S. Army care about civilian BMI?

High obesity rates in the U.S. general (civilian) population directly impact the military's available recruitment pool, resulting in threats to national security.

- As of 2014, over one-third of young adult military applicants do not meet the U.S. Army's body composition standards for enlistment.[6]
- The inability to meet body composition standards is a leading reason applicants are determined to be non-suitable to enter any of the U.S. military services.[6]
- Military Veterans have rates of obesity and related diseases comparable to that of the general population.[7] Increases in weight and BMI among Veterans occur within a few years of discharge or retirement.[7]

The annual cost of treating medical conditions associated with obesity in Veterans population has been estimated to be over $1 billion.[6]

## What options are available for Soldiers who exceed the BMI standard?

The U.S. Army weight-for-height (BMI) standard is useful as a screening tool for body composition standards, but there are limitations.

If a Soldier exceeds their standard weight-for-height, an additional body fat assessment is conducted. The latest "tape test" of a one-site abdominal circumference measurement controlled by body weight is obtained to determine an estimated percentage of body fat.[5] Most of those exceeding the U.S. Army BMI standard will also exceed the maximum allowable body fat.[8]

Soldiers who are overweight and have excessive body fat are at increased risk of injury and illness. If a Soldier does not meet the height-weight, circumference-based tape standards or supplemental body fat assessment, they are flagged and enter the U.S. Army Body Composition Program (ABCP) (https://www.armyresilience.army.mil/abcp/index.html). Being flagged can impact a Soldier's ability to deploy, reenlist, or attend professional schools. The primary objective of the ABCP is to ensure that all Soldiers achieve and maintain optimal well-being and performance under all conditions. To reduce a Soldier's BMI, the ABCP's goal is a monthly loss of 3 to 8 pounds, or 1% body fat, until the Soldier is within the U.S. Army standards.[4] Weight loss is accomplished though exercise guidance from a master fitness trainer and counseling from a registered dietitian.

## What is the BMI status in the Active-Duty U.S. Army?

The Active-Duty population is generally considered more fit than the general population. However, despite mandatory fitness requirements, excessive fat continues to be a problem among Soldiers.[9] DoD obesity trends parallel those within the general population.[10] More than half of the Active-Duty population has a BMI >27.5 and would be classified as overweight or obese.[11] Being overweight or obese has been related to:

- Lost workdays.[12]
- Increased medical costs associated with illness or injury.[12]
- An earlier departure from service.[12]
- Poor physical performance results.[12]
- Logistical problems presented when clothing and protective gear do not fit overweight Soldiers.[13]

Also, while only a small portion of the population, those below minimum weight standards with very low BMI (i.e., BMI <19) are at higher risk of injury than fit Soldiers with normal or moderately high BMI.[14] Leaders should be aware of the high and low BMI risk groups in order to monitor Soldiers and enhance readiness through appropriate nutrition and exercise programs.

## How do you improve your BMI?

BMI can be a useful measure to monitor as part of a weight management or exercise plan. Weight management plans should be tailored to individuals with advice from trained professionals.

Armed Forces Wellness Centers (https://phc.amedd.army.mil/topics/healthyliving/al/Pages/ArmyWellnessCenters.aspx) provide Active-Duty personnel and U.S. Government civilians free programs and services delivered by highly trained health professionals to improve and sustain health, performance, and readiness. Programs to improve BMI include:

- Healthy nutrition education.
- Biometric screening, including body fat measurements.
- Metabolic and exercise testing.
- General wellness education.

## Key Information Sources


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