

## Appendix B Standard Methods for Determining Body Fat Using Body Circumferences, Height, and Weight

### B-1. Introduction

a. The procedures for the measurements of height, weight, and specific body circumferences for the estimation of body fat are described in this appendix. The weight for height table is listed in table B-1 followed by the body fat standards in table B-2.

b. Although circumferences may be looked upon by untrained personnel as easy measures, they can give erroneous results if proper technique is not followed. The individual taking the measurements must have a thorough understanding of the appropriate body landmarks and measurement techniques. Unit commanders will require that designated personnel have read the instructions regarding technique and location and obtained adequate practice before official body fat determinations are made. Individuals taking the measurements will be designated unit fitness trainers, certified master fitness trainers, and/or trained in body circumference methodology, as specified in para 2-18c. Two members of the unit will be utilized in the taking of measurements; one to place the tape measure and determine measurements and the other to assure proper placement and tension of the tape, as well as to record the measurement on the worksheet (DA Form 5500 and DA Form 5501). Soldiers should be measured by trained individuals of the same gender. If a trained individual of the same gender is not available to conduct the measurements, a female Soldier will be present when a male measures a female, and a male Soldier will be present when a female measures a male. The two will work with the Soldier between them so the tape is clearly visible from all sides. Take all circumference measurements sequentially three times and record them to the nearest half inch. If any one of the three closest measurements differs by more than 1 inch from the other two, take an additional measurement and compute a mathematical average of the three measurements with the least difference to the nearest half inch and record this value.

c. Soldiers will be measured for body fat in stocking feet and standard Army physical fitness uniform trunks and T-shirt. Undergarments that may serve to bind the abdomen, hip, or thigh areas are not authorized for wear when a Soldier is being measured for body fat composition. This includes, but is not limited to spandex shorts or girdle-like undergarments.

d. When measuring circumferences, compression of the soft tissue requires constant attention. The tape will be applied so it makes contact with the skin and conforms to the body surface being measured. It will not compress the underlying soft tissues. However, the hip circumference measurement requires more firm pressure to compress the authorized physical fitness uniform trunks. All measurements are made in the horizontal plane (parallel to the floor), unless indicated otherwise.

e. The tape measure will be made of a nonstretchable material, preferably fiberglass; cloth or steel tapes are unacceptable. Cloth measuring tapes will stretch with usage and most steel tapes do not conform to body surfaces. The tape measure will be calibrated, that is, compared with a yardstick or a metal ruler to ensure validity. This is done by aligning the fiberglass tape measure with the quarter-inch markings on the ruler. The markings will match those on the ruler; if not, do not use that tape measure. The tape will be one-quarter to one-half inch wide (not exceeding one-half inch) and a minimum of 5 feet in length. A retractable fiberglass tape is the best type for measuring all areas.

*Note.* Tapes are currently available through the Army Supply System (Federal stock number 5210-01-238-8103 or national stock number 8315-01-238-8103). The current Army supply system or any other fiberglass tape (not to exceed one-half inch) may be used if retractable tapes cannot be purchased by unit budget funds available and if approved by installation commanders.

### B-2. Height and weight measurements

a. The height will be measured with the Soldier in stocking feet (without running shoes) and wearing the authorized physical fitness uniform (trunks and T-shirt). The Soldier will stand on a flat surface with the head held horizontal, looking directly forward with the line of vision horizontal and the chin parallel to the floor. The body will be straight but not rigid, similar to the position of attention. When measuring height to determine body fat percentage (fig B-1 or B-2), the Soldier's height is measured to the nearest half inch. When measuring height to use the weight for height screening table (table B-1) the Soldier's height is measured and then rounded to the nearest inch with the following guidelines:

- (1) If the height fraction is less than half an inch, round down to the nearest whole number in inches.
- (2) If the height fraction is half an inch or greater, round up to the next highest whole number in inches.

b. The weight will be measured with the Soldier in stocking feet and wearing the authorized physical fitness uniform (trunks and T-shirt); running shoes will not be worn. Scales used for weight measurement will be calibrated annually for accuracy. The measurement will be made on scales available in units and recorded to the nearest pound with the following guidelines:

- (1) If the weight fraction of the Soldier is less than one-half pound, round down to the nearest pound.
- (2) If the weight fraction of the Soldier is one half-pound or greater, round up to the next whole pound.
- (3) No weight will be deducted to account for clothing.

**Table B-1**  
**Weight for height table (screening table weight)**

Height (inches)	Minimum weight <sup>1</sup> (pounds)	Male weight in pounds, by age				Female weight in pounds, by age			
		17-20	21-27	28-39	40+	17-20	21-27	28-39	40+
58	91	-	-	-	-	119	121	122	124
59	94	-	-	-	-	124	125	126	128
60	97	132	136	139	141	128	129	131	133
61	100	136	140	144	146	132	134	135	137
62	104	141	144	148	150	136	138	140	142
63	107	145	149	153	155	141	143	144	146
64	110	150	154	158	160	145	147	149	151
65	114	155	159	163	165	150	152	154	156
66	117	160	163	168	170	155	156	158	161
67	121	165	169	174	176	159	161	163	166
68	125	170	174	179	181	164	166	168	171
69	128	175	179	184	186	169	171	173	176
70	132	180	185	189	192	174	176	178	181
71	136	185	189	194	197	179	181	183	186
72	140	190	195	200	203	184	186	188	191
73	144	195	200	205	208	189	191	194	197
74	148	201	206	211	214	194	197	199	202
75	152	206	212	217	220	200	202	204	208
76	156	212	217	223	226	205	207	210	213
77	160	218	223	229	232	210	213	215	219
78	164	223	229	235	238	216	218	221	225
79	168	229	235	241	244	221	224	227	230
80 <sup>2</sup>	173	234	240	247	250	227	230	233	236

Notes:

<sup>1</sup> Male and female Soldiers who fall below the minimum weights shown in table B-1 will be referred by the commander for immediate medical evaluation.

<sup>2</sup> Add 6 pounds per inch for males over 80 inches and 5 pounds per inch for females over 80 inches.

**Table B-2**  
**Maximum allowable percent body fat standards**

**Age group: 17-20**  
**Male (% body fat): 20%**  
**Female (% body fat): 30%**

**Age group: 21-27**  
**Male (% body fat): 22%**  
**Female (% body fat): 32%**

**Age group: 28-39**  
**Male (% body fat): 24%**  
**Female (% body fat): 34%**

**Age group: 40 and older**  
**Male (% body fat): 26%**  
**Female (% body fat): 36%**