

Body Composition Assessment (BCA)



Objectives

- Discuss Body Composition Measurement Techniques
- Discuss the Navy's 3-step process for completing BCA
- Discuss and locate the abdominal circumference (AC) site to determine a proper AC measurement
- Discuss and locate the body circumference sites to determine BCA
- Conduct AC and body fat percentage calculations

Body Fat Measurement Techniques

Method	Std. Error %	Cost per Machine	Cost Per Person	Time Per Person
DXA Scan*	1.0 – 2.0	\$100K	\$100 - \$300	15 min
BOD POD	1.5 – 3.0	\$50K	\$40 - \$50	10 min
Hydrostatic Weight*	1.5 -3.0	\$50K - \$75K	\$50	45 – 60 min
Circumference	3.5	Cost per Myotape** \$2.95 - \$4.00	Low	5 min
Calipers***	3.0 – 5.0	Cost per set of Calipers - \$125	Low	10 min
Height/Weight	5.0	No Cost	Low	2 min
Bio-Impedance*	4.0 – 5.0	\$3K - \$18K	\$40	1 min
Near Infrared* (NIR)	4.0 – 7.0	\$2K - \$5K	\$20 - \$40	10 min

* Research/Clinical Environment.

** Cost dependent on number of tapes ordered.

*** Requires extensive training/can be variations in results performer to performer.

Physical Readiness Standards

- Based on general health and fitness of the Sailor
- Body fat standards are NOT based on:
 - Job performance
 - Appearance in uniform

Navy Body Composition Assessment (BCA) Process

- Step 1: Weight for height screening
- Step 2: If member exceeds, single site abdominal circumference (AC) measurement is required
- Step: 3 If member exceeds AC maximum, body circumference (BC) measurement is required
 - NAVADMIN 178/15 - 3 Aug 2015

DoD Instruction 1308.3

- All DoD components shall measure body fat using only the circumference-based method with one set of measurements
 - Male: neck and abdomen
 - Female: neck, waist, and hips
- DoN received waiver from OASD (HA) to deviate from DODI 1308.3 and include the AC as step 2 of BCA process

Height-Weight Requirements

- Only taken by CFL/ trained ACFL
- 45 days from BCA to PRT, not within 24 hours of PRT
- Shoes removed
- PTU or UOD
- No deduction for clothing

Height

- Measure height each time
- Round up to nearest inch

TABLE 1
PHYSICAL FITNESS ASSESSMENT (PFA) TABLES
MAXIMUM WEIGHT FOR HEIGHT SCREENING TABLE

Men Maximum Weight (pounds)	Member's Height (inches with fractions rounded up to nearest whole inch)	Women Maximum Weight (pounds)
127	57	127
131	58	131
136	59	136
141	60	141
145	61	145
150	62	149
155	63	152
160	64	156
165	65	160
170	66	163
175	67	167
181	68	170
186	69	174
191	70	177
196	71	181
201	72	185
206	73	189
211	74	194
216	75	200
221	76	205
226	77	211
231	78	216
236	79	222
241	80	227

Weight

- Calibrate scale
- Fractions of a pound shall be recorded to the nearest pound:
 - Round down weight fractions less than $\frac{1}{2}$ pound
 - Round up weight fractions greater than $\frac{1}{2}$ pound
- No deduction for clothing

Abdominal Circumference Measurement

- Scientific evidence indicates that Sailors are at increased risk for health problems if their abdomen exceeds a certain circumference
 - Diabetes
 - Heart Disease
 - Hypertension
 - Dyslipidemia
 - Certain Cancers

BCA Technician Requirements

- At least 2 personnel present*
- Must be by a CFL or trained ACFL to measure member
- Do not need CFL/ACFL (measuring) of same gender as member, however have someone of the same gender present

* 2nd member holds shirt, ensures tape is parallel to the deck

BCA Equipment and Personnel Requirements

- Any non-stretch tape, not cloth
- Calibrate with yard stick to ensure tape is accurate
- CO's/OIC's should specify uniform of the day or Navy PTU for official and unofficial height and weight screening and circumference measurements



BCA Measurement Requirements

- Feet: as appropriate
 - AC: Feet no further than shoulder width
 - BC: Feet together
- Ensure correct placement of tape*
- Tape parallel to the deck*
- Take 2 sets of measurements in sequential order
 - Take an average, not the lowest

* Common errors with taping

Measurement Discrepancy

- Members shall be taped 2 times
- If there is more than 1 inch difference in the 2 measurements, a 3rd measurement will be taken
- Calculate the average of the 2 closest measurements

Step #2: AC Measurement

- Same Female/Male measurement site
 - Across superior border of the Iliac Crest vertically in line with mid-axillary line (armpit)
- Feet no more than shoulder width apart
- Tape parallel to the deck at the level of the Iliac Crest

Step #3: BC Estimation Method

- Height rounded up to the nearest half inch
- Circumference Value (CV)
 - Male CV:
abdominal - neck = CV
 - Female CV:
(hips + natural waist) - neck = CV
- Refer to body fat estimate chart

BC Key Points

- Male measurements
 - Neck under Adams apple
 - Abdominal across navel
- Female measurements
 - Neck at larynx (have member swallow)
 - Natural waist at smallest portion
 - Hips across largest protrusion of gluteal muscle
- Feet together
- Always take 2 consecutive sets

Body Fat Estimate Chart

Located in Operating Guide 4

Note: half inches differs from height-weight screen

Height and CV = body fat %

**APPENDIX B
PERCENT FAT ESTIMATION FOR MEN**

Circumference Value*	Height (inches)									
	60.0	60.5	61.0	61.5	62.0	62.5	63.0	63.5	64.0	64.5
13.0	8	8	8	8	7	7	7	6	6	6
13.5	10	9	9	8	9	8	8	8	8	8
14.0	11	11	10	10	10	10	10	9	9	9
14.5	12	12	12	11	11	11	11	11	10	10
15.0	13	13	13	13	12	12	12	12	12	11
15.5	15	14	14	14	14	13	13	13	13	12
16.0	16	15	15	15	15	15	14	14	14	14
16.5	17	17	16	16	16	16	15	15	15	15
17.0	18	18	17	17	17	17	16	16	16	16
17.5	19	19	19	18	18	18	18	17	17	17
18.0	20	20	20	19	19	19	19	18	18	18
18.5	21	21	21	20	20	20	20	19	19	19
19.0	22	22	22	21	21	21	21	20	20	20
19.5	23	23	23	22	22	22	22	21	21	21
20.0	24	24	23	23	23	23	22	22	22	22
20.5	25	25	24	24	24	24	23	23	23	23
21.0	26	26	25	25	25	25	24	24	24	24
21.5	27	26	26	26	26	25	25	25	25	24
22.0	28	27	27	27	27	26	26	26	26	25
22.5	28	28	28	28	27	27	27	27	26	26
23.0	29	29	29	29	28	28	28	28	27	27
23.5	30	30	30	29	29	29	29	28	28	28
24.0	31	31	30	30	30	30	29	29	29	29
24.5	32	31	31	31	31	30	30	30	30	29
25.0	33	32	32	32	31	31	31	31	30	30
25.5	33	33	33	33	32	32	32	31	31	31
26.0	34	34	34	33	33	33	32	32	32	32
26.5	35	35	34	34	34	33	33	33	33	32
27.0	36	35	35	35	34	34	34	34	33	33
27.5	36	36	36	35	35	35	35	34	34	34
28.0	37	37	36	36	36	36	35	35	35	35
28.5	38	37	37	37	37	36	36	36	36	35
29.0	38	38	38	38	37	37	37	37	36	36
29.5	39	39	39	38	38	38	37	37	37	37
30.0	40	39	39	39	39	38	38	38	38	37
30.5	40	40	40	40	39	39	39	39	38	38
31.0	41	41	40	40	40	40	39	39	39	39
31.5	42	41	41	41	41	40	40	40	40	39
32.0	42	42	42	42	41	41	41	40	40	40

*Circumference value = abdomen circumference - neck circumference (in inches)

Body Fat % Example

- Male
- $CV = 19$
- Height = 64.2 in
- What is the body fat %?

Common Cheats

- Body Wraps
 - wait 72 hours before re-measuring
- Shoe inserts in socks
- Hair buns/extensions
 - measure top of head
not hair
- Standing on toes



Maintaining Integrity

- If you are not comfortable measuring someone, have another qualified CFL/ACFL take the measurements
- You may use a CFL from another command
- Measurements must be made by a CFL/
trained ACFL

BCA Pass

- Member meets height-weight standards
or
- Outside of height-weight standards but meets single site AC measurement (Females: ≤ 35.5 in. Males: ≤ 39 in.)
or
- Outside of height-weight standards and AC, but meets DoD body fat % standards (Females: $\leq 36\%$ Males: $\leq 26\%$)

BCA Failure

- Member fails to meet height-weight standards

AND

- Is outside of AC maximum allowable measurement (Female: > 35.5 , Male: > 39)

AND

- Is outside of DoD maximum allowable body fat % (Female: $> 36\%$, Male: $> 26\%$)

Navy Graduated BCA Standards by Age

Male Age:

- 18-21: 22%
- 22-29: 23%
- 30-39: 24%
- 40+: 26%

Female Age:

- 18-21: 33%
- 22-29: 34%
- 30-39: 35%
- 40+: 36%

- Any Sailor who exceeds the Navy graduated body fat standards must be enrolled in FEP
 - NAVADMIN 178/15 3 Aug 2015

Why does the Navy use body fat circumference measurements?

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- DoD Instruction 1308.3 states all services shall....

What personnel are authorized to take official BCAs?

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- Only taken by CFL/ trained ACFL

**How many sets of
measurements are required?**

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- Take all circumference measurements two times. Take a third measurement if one of the two measurements differs by more than one inch from the other.

Do you take the lowest of the two?

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- No, average the two measurements

Summary

- Maintain accurate equipment
- 2 members must be present for all measurements
- Handle cheating immediately

References

- Naval Health Research Center – Calipers
- OPNAVINST 6110.1 (Series)
- Physical Readiness Program Guide 4: The Body Composition Assessment (BCA)
- NAVADMIN 178/15

Need Live Demo Volunteers

- 1 Male and 1 Female

AC Measurement Check

- Were the members':
 - Hands/Arms not extended above shoulders?
 - Feet no more than shoulder width apart?
- Was the tape:
 - Parallel to the deck at the Iliac Crest?
 - In back and front?
- Were 2 sets taken?
 - At the superior border of the Iliac Crest vertically in line with the mid-axillary line (armpit)?

BC Measurement Check

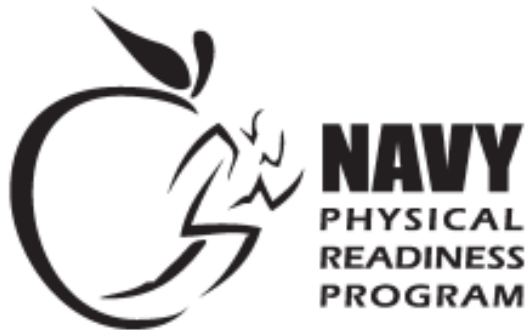
- Were the members':
 - Hands down at the side?
 - Feet together?
- Was the tape:
 - Parallel to the deck?
 - In back and front?
- Were 2 sets taken?
 - (Neck, abs) and (neck, abs) [Male]
 - (Neck, waist, hips) and (neck, waist, hips) [Female]

BCA Practical Lab

- Divide into PT teams
- Each person takes 2 sets of measurements (AC & BC) on each group member
- Include a female if possible
- BCA Worksheet is in your CFL binder
- Come to consensus among the group
- Any person with different measurements must be re-measured

PFA Decision Making

**Command Fitness
Leader**



**PFA Decision Making Activity
(BCA - Height & Weight)**

**Command Fitness
Leader**



**PFA Decision Making Activity
(BCA - Measurements)**

Questions?

