



## THE OBESITY MEDICINE ASSOCIATION'S GUIDE TO OBESITY CLASSIFICATION\*

For more educational resources about obesity, visit [obesitymedicine.org](http://obesitymedicine.org)

### BODY MASS INDEX



Classification (kg/m<sup>2</sup>):

	♂ ♀
NORMAL WEIGHT	18.5-24.9
OVERWEIGHT	25.0-29.9
CLASS I OBESITY	30.0-34.9
CLASS II OBESITY	35.0-39.9
CLASS III OBESITY	≥40

Body mass index (BMI) is measured by taking the weight in kilograms divided by the height in meters squared.

#### Advantages

- Increased BMI generally correlates with metabolic and fat mass diseases in population studies
- Commonly used
- Reasonably reproducible
- Low cost
- Adequate measure for epidemiological studies
- Adequate screening metric for most patients

#### Disadvantages

- May not correlate with metabolic and fat mass diseases in an individual patient
- Does not account for muscle mass
- BMI cut-off points do not distinguish between men and women, nor ethnic and racial considerations
- Should be used as part of the clinical evaluation and not as the sole measure of obesity for all patients

\*Different BMI cut-off points may be more appropriate for women versus men, those of different races, and certain individuals. References: [1] [2] [3] [6] [7] [8]

### PERCENT BODY FAT



Classification<sup>1</sup>:

	♂	♀
ESSENTIAL FAT	2-5%	10-13%
ATHLETES	6-13%	14-20%
FITNESS	14-17%	21-24%
ACCEPTABLE	18-24%	25-31%
OBESITY	≥25%	≥32%

Percent body fat is measured by taking the total mass of fat divided by the total body mass. There are a number of measurement techniques, including bioimpedance and DEXA scans.

#### Advantages

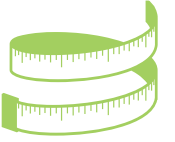
- More specific assessment of body fat (not muscle, etc.)
- May be a reasonable longitudinal measure in patients adhering to resistance exercise training

#### Disadvantages

- Some measures are not always accurate, nor easily reproducible (e.g., single site skinfold calipers)
- Electronic/machine body fat measures may be expensive
- Cut-off points not as validated to correlate to metabolic disease, compared with waist circumference

<sup>1</sup>Based on "expert opinion;" cut-off points not scientifically validated. References: [6] [7] [8] [9]

### WAIST CIRCUMFERENCE



Classification<sup>1</sup>:

	♂	♀
ABDOMINAL OBESITY	≥40 inches	≥35 inches
	≥102 centimeters	≥88 centimeters

Waist circumference is measured at the abdomen, usually at the smallest circumference of the natural waist, just above the belly button.

#### Advantages

- Well correlated to metabolic disease
- Direct anatomical measure of adipose tissue deposition, with an increase in waist circumference reflective of adipose tissue dysfunction
- Low cost

#### Disadvantages

- Measurement not always reproducible
- Not clear that waist circumference is clinically superior to BMI in correlating to metabolic disease, especially at BMI >35 kg/m<sup>2</sup>
- Racial/ethnic differences

<sup>1</sup>Different abdominal obesity cut-off points are appropriate for different races. References: [4] [5] [6] [7]

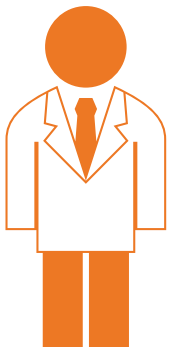
## WHICH METHOD IS THE "BEST" MEASURE OF OBESITY?

### POPULATION ASSESSMENT

- Body mass index (BMI), percent body fat, and waist circumference similarly correlate with prevalence of metabolic syndrome

### INDIVIDUAL ASSESSMENT

- BMI is a reasonable initial screening measurement for most patients
- Percent body fat may be useful in patients with extremes in muscle mass (e.g., individuals with sarcopenia or substantial increases in muscle mass), and thus may be a more accurate measure of body composition when assessing the efficacy of interventions directed toward change in muscle mass
- Waist circumference provides additional information regarding adipose tissue function and dysfunction and predisposition to metabolic disease among individuals with BMI <35 kg/m<sup>2</sup>



#### References

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 [7] Wang Z, Ma J, Si D. Optimal cut-off values and population means of waist circumference in different populations. *Nutr Res Rev* 2010 23:191-199.  
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