

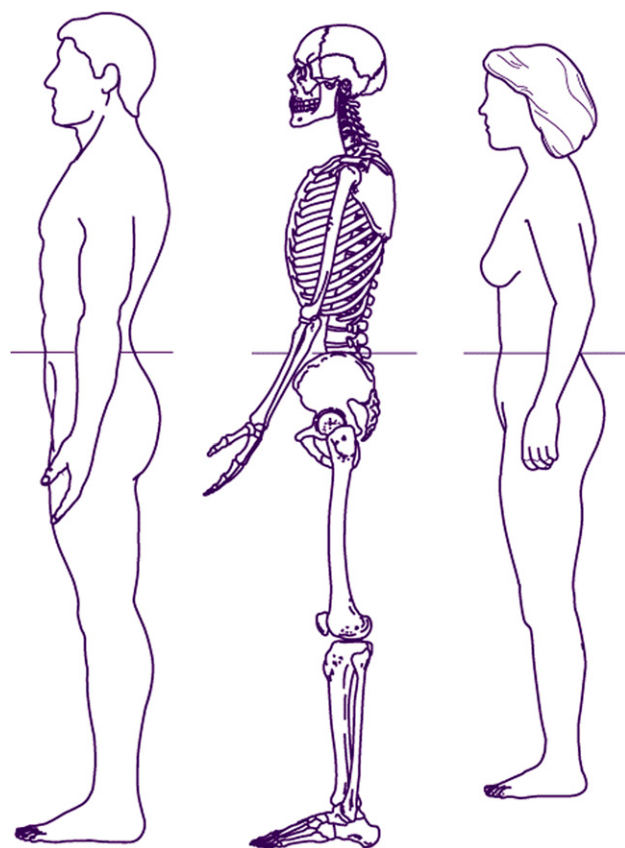


Figure 2. Measuring waist circumference according to National Health and Nutrition Examination Survey III protocol (31). [Reproduced from NHLBI Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Obesity in Adults (US). Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report. Bethesda (MD): National Heart, Lung, and Blood Institute; 1998 Sep. Available at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=obesity.figgrp.237>.]

Evidence

Numerous prospective observational studies have indicated that waist circumference and waist-to-hip ratio are better measures of central obesity and are better predictors of risk for ASCVD and diabetes than is weight or BMI (33). The Writing Committee advocates waist measurement because of its ease of use in the clinical setting when performed properly. Currently, waist circumference is rarely used by clinicians in the primary care setting. Increased use would help identify those individuals at higher risk who should receive further screening. However, it should not replace weight measurement or BMI, but should be complementary, because longitudinal measurement of weight is important for following up any major clinical interventions to treat obesity.

The Joint Interim Statement on metabolic syndrome (10) recognizes that the definition of elevated waist circumference is variable among different populations and suggests that for Europids (those of European descent), the threshold for increased waist circumference is ≥ 94 cm in

men and ≥ 80 cm in women. For the US population, the AHA/NHLBI defines elevated waist circumference as ≥ 102 cm for men and ≥ 88 cm for women of non-Asian ethnicity and as ≥ 90 cm for men and ≥ 80 cm for women of South Asian and East Asian ethnicity [Table 2 (9, 34, 35)]. The “harmonized definition” of the metabolic syndrome, published in 2009, allowed for different ethnic waist circumference cutoffs based on different local guidelines without judging the relative merits.

Two important studies showed the rationale for using different cutoff points of waist circumferences in people of Asian descent. Tan *et al.* (36) found that a waist circumference cutoff of ≥ 90 cm in men and ≥ 80 cm in women seems to be comparable to that in US adults in terms of cardiometabolic risk. Alternatively, according to the reports from the examination committee of criteria for “obesity disease” in Japan, Japanese people with a visceral fat area (VFA) of >100 cm² have more than one obesity-related disorder, such as hyperglycemia, dyslipidemia, and hypertension. The correlation between VFA and waist circumference in men and women showed that a waist circumference of 85 cm in men and 90 cm in women corresponds to a VFA of 100 cm² (35). The Writing Committee recognizes heterogeneity within Asian populations (37, 38) and that East Asian and South Asian populations may have significant differences in lipid indices, fat mass as a proportion of BMI, and cardiovascular morbidity. More studies are necessary to clarify these differences before consensus on separate cutoffs for waist circumference might be established for these specific ethnic groups. Nevertheless, because of the considerable ethnicity-based variation in standard waist circumference, it is practical to use the ethnicity-specific values for waist circumferences in the 2005 AHA/NHLBI definition of the metabolic syndrome (8) until more specific data are available. There are potential limitations of waist circumferences, especially in people with BMI >35 ; however, these limitations may be less marked in Asian populations.

Practicality in the clinical setting is an important determinant of the use of waist circumference measurement. The Writing Committee places a high value on the need to identify risk for diabetes and ASCVD in ethnic populations where the incidence is increasing especially rapidly. Waist circumference can be easily measured in the clinical setting according to the National Health and Nutrition Examination Survey (NHANES) III protocol (39). This protocol directs health care providers to first identify and mark a bony landmark, the point at which waist circumference is measured. The subject stands and the examiner, positioned to the right of the subject, palpates the upper hip bone to locate the right iliac crest. Just above the uppermost lateral border of the right iliac crest, a horizontal mark is drawn and then crossed with a