

Waist Circumference Measurements in Clinical Research

The waist circumference (WC) measurement is a simple anthropometric indicator of metabolic and cardiovascular risk, and is a key diagnostic criterion for metabolic syndrome.

There are four commonly used WC measurement sites:

1. Superior border of iliac crest (NIH recommendation)¹
2. Midpoint between iliac crest and lowest rib (WHO recommendation)²
3. Umbilicus
4. Minimal waist

While the recommended measurement site varies, much of the literature is consistent that the following methods should be used to measure WC:

1. The person should be standing and relaxed.
2. Restrictive clothing should be removed from the abdomen.
3. Measurements should be taken directly on the skin.
4. Measurements should be taken with a tension-sensitive, non-elastic tape (such as the Gulick II).
5. The tape should be placed in a horizontal line around the abdomen, making sure that the tape is evenly parallel to the floor.
6. The measurement should be read on the right side of the body, in the midaxillary line.
7. The measurement should be read at the end of a normal expiration.

While recent work by Mason and Katzmarzyk showed that measurements obtained from the four different sites were highly correlated with one another, the small differences between measurements was amplified when estimating abdominal obesity using cut-points of >88 cm for women and >102 cm for men. Therefore, the choice of measurement site may influence research findings and should be considered when interpreting WC measurement data.³

1. National Institutes of Health. *The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults* October 2000.
2. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser.* 2000;894:i-xii, 1-253.
3. Mason C, Katzmarzyk PT. Variability in waist circumference measurements according to anatomic measurement site. *Obesity (Silver Spring)*. Sep 2009;17(9):1789-1795.