



## Waist Circumference and Cardiovascular Risk: 20 Years On



It has been twenty years since the publication in the American Journal of Cardiology of a Canadian study showing that waist circumference correlates with abdominal visceral adipose tissue, which in excess predisposes individuals to atherogenic and diabetogenic abnormalities. At the time, imaging was not widely used for clinical diagnosis of obesity, and researchers were able to show that crude measurements of waist circumference and the thickness of the abdomen from back to front (sagittal diameter) were useful correlates of visceral adipose tissue. Jean-Pierre Deprés, PhD reexamines the topic and the study's time-tested findings on the anniversary of its initial publication.

### The Hypertriglyceridemic Waist

In the two decades which have elapsed since 1994, and as obesity prevalence has increased in many nations, multiple findings have supported the linear relationship between abdominal measurements and cardio-metabolic risks, including glucose intolerance, low insulin and reduced levels of HDL cholesterol. When subcutaneous adipose tissue is dysfunctional in visceral obesity, ectopic fat is deposited in lean tissue, including the heart, liver and muscles of the skeleton. Inflammation and insulin resistance contribute to abnormal atherogenic and diabetogenic metabolism.

However, waist circumference alone is insufficient for identifying individuals at greater risk for health complications, since excess abdominal subcutaneous deposits can also contribute to midline girth. In 2000, researchers suggested that the additional presence of high levels of plasma triglycerides more accurately discriminates at-risk individuals, coining the phrase "hypertriglyceridemic waist". In the years that followed, several studies have described an increased risk of coronary heart disease in such individuals, in addition to their metabolic abnormalities.

### BMI and Cardiovascular Disease

Waist circumference is an even more useful discriminant of cardiovascular and metabolic risk when body mass index (BMI) is known. Indeed, circumference measurements should be interpreted in the context of BMI whenever possible, since any two individuals with the same waistline measurements can have differing BMI values and therefore meet different criteria for clinical obesity; one may be abdominally obese while the other is overall obese with more lean body mass.

Another recommendation from a panel of experts is to use a single landmark to measure waist circumference: the top of the iliac crest. The absolute value will differ depending on whether the waist is measured there or at its narrowest point, halfway between the bottom of the rib cage to the top of the iliac crest, or the umbilicus. To

facilitate healthcare professionals and individuals interested in measuring their own waist circumference, the authors of the study have launched an abdominal obesity website at [www.myhealthywaist.org](http://www.myhealthywaist.org), which includes a downloadable, animated guide.

### **Waist Loss vs. Weight Loss**

A wider waistline for any given BMI value simply and usefully predicts the presence of excess ectopic fat, especially if triglyceride levels are also elevated. Abdominal obesity is a criterion in the diagnosis of metabolic syndrome, although the initially-proposed circumference limits of 102 centimetres for men and 88 centimetres for women are not necessarily applicable to every population. Lower values for waist circumference are associated with cardio-metabolic risk in some ethnic groups, including Asians and South Asians; these groups are more likely to have complications associated with lower BMI values.

Rather than targeting a general weight loss, which can be misleading since patients who begin to exercise may gain muscle weight, doctors should encourage a lower waist circumference through regular physical activity. Studies of diabetes prevention have shown that a relatively small reduction in waist line measurements can substantially reduce the risk of developing diabetes. A four-centimetres drop was associated with a nearly 60 percent risk reduction for individuals already dealing with impaired glucose tolerance.

Source: .

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