

# Commentary on Current Literature

*Richard A. Johnson, MD*

## **Waist Circumference Criteria for the Diagnosis of Abdominal Obesity Are Not Applicable Uniformly to All Populations and Ethnic Groups**

Misra A, Wasir JS, Vikram NK.

*Nutrition*. 2005;21:969–976.

Determination of cutoff points of waist circumference is of paramount importance for prevention, optimum management, and prognostication of obesity, the metabolic syndrome, type 2 diabetes mellitus, and coronary heart disease. Heterogeneity of composition of abdominal tissues, in particular adipose tissue and skeletal muscle, and their location-specific and changing relations with metabolic factors and cardiovascular risk factors in different ethnic groups do not allow a simple definition of abdominal obesity that could be applied

uniformly. In particular, Asians appear to have higher morbidity at lower cutoff points for waist circumference than do white Caucasians. International health agencies that deal with obesity (World Health Organization, International Obesity Task Force) should take cognizance of these data and consider formulating new cutoff points for waist circumference to define abdominal obesity for Asian populations.

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### **COMMENTARY**

**This excellent review article, by authors from India, discusses the heterogeneity of certain anthropomorphic measures. Physicians must recognize these differences because some of these measurements (ie, waist circumference and waist-to-hip circumference ratios) are important parameters for managing a patient's cardiovascular risk. Most urban and suburban physicians practice in multiracial settings. Misra et al point out that lower cutoff points are needed to assign equal incremental cardiovascular risk for waist circumference in Indian populations and other groups of Asian origin. Waist circumference is increasingly being used as a proxy for abdominal visceral fat mass, but differences in adipose tissue, skeletal muscle, bones, mechanical factors, respiratory excursions, posture, and laxity of anterior abdominal wall muscles can affect the validity of its utility in this setting.**

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## **Abdominal Obesity Predicts Declining Insulin Sensitivity in Non-Obese Normoglycaemics: The Insulin Resistance Atherosclerosis Study (IRAS)**

Karter AJ, D'Agostino RB Jr, Mayer-Davis EJ, et al.

*Diabetes Obes Metab.* 2005;7:230–238.

**AIM:** Cross-sectional studies have demonstrated a relationship between obesity and insulin sensitivity (S(I)); however, there is a lack of evidence from longitudinal studies.

**METHODS:** The Insulin Resistance Atherosclerosis Study (IRAS) estimated S(I) ( $\times 10^{-4}$ )/min.microU/ml directly using a frequently sampled intravenous glucose tolerance test with minimal model analysis in 504 normoglycaemic subjects. Partial correlation coefficients (r) were calculated to compare the relationship of change in S(I) from baseline to 5 years later (DeltaS(I)) with baseline waist circumference (waist) as a measure of abdominal obesity and body mass index (BMI) as a measure of overall obesity. Mean DeltaS(I) was  $-1.06$  (SD = 1.85).

**RESULTS:** Higher baseline waist ( $r = -0.16$ ;  $p = 0.0005$ ), but not BMI ( $r = -0.005$ ;  $p = 0.91$ ), was associated with

(-) DeltaS(I) in models including sex, ethnicity, clinical centre and baseline S(I), BMI, waist, age and physical activity. The waist-DeltaS(I) relationship differed across the levels of baseline BMI, being significant only in normal weight ( $r = -0.21$ ) and overweight subjects ( $r = -0.16$ ), but not in obese subjects. DeltaS(I) was correlated with a 5-year change in either obesity measure (Deltawaist:  $r = -0.22$  and DeltaBMI:  $r = -0.20$ ;  $p = 0.0001$ ).

**CONCLUSIONS:** Among non-diabetics, waist circumference was a strong predictor of declining S(I) among lean subjects, a modest predictor among overweight subjects, but was not predictive among obese individuals. Waist circumference should be considered, in addition to BMI, when identifying individuals at high risk of diabetes or the insulin resistance syndrome.

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### **COMMENTARY**

These authors report an interesting finding from the IRAS, a multicenter study of the relationship of insulin and insulin resistance to atherosclerosis and its risk factors in diabetic and nondiabetic black, Hispanic, and non-Hispanic white men and women. Patients with larger waistlines who were nondiabetic and were normal weight or overweight (body mass index [BMI]  $< 30$  kg/m<sup>2</sup>) at baseline experienced the largest reduction in insulin sensitivity during 5-year follow-up. However, among those patients considered obese (BMI  $\geq 30$  kg/m<sup>2</sup>) at baseline, waist circumference was not positively correlated with a decline in insulin sensitivity. These patients had lower insulin sensitivity at baseline, and therefore may have had a smaller chance of further sensitivity decline; they may have also made greater lifestyle changes to improve their insulin sensitivity. This IRAS finding suggests that physicians should take greater strides to ensure that the waistlines of thin and slightly overweight patients remain trim.