
 COMMENTS AND
 RESPONSES

Lower Vital Capacity Is Associated With Diabetes but Not With Metabolic Syndrome in Nonobese Japanese Men

Response to Nakajima and Saito

We appreciate the comment on our observation by Nakajima and Saito (1). They suggested that low percentage vital capacity (%VC), which commonly reflects restrictive lung, in nonobese men might be associated with the characteristics of metabolically obese but normal-weight individuals (2). We partially agree with them. However, when we examined men with BMI <23 kg/m², excluding current smokers, the frequency of diabetes was higher but the frequency of metabolic syndrome (MetS) was lower in subjects with lower %VC than those with higher %VC (3).

In response to the comment of Nakajima and Saito, we studied the relationships between metabolic risk factors and the quartiles of %VC in 1,854 men with BMI <25 kg/m² who visited our Medical Check-up Center in Nagaoka, Niigata, Ja-

pan, between April 2008 and March 2009 (excluding men with blood levels of high-sensitivity C-reactive protein \geq 10 mg/l or without relevant data). The frequency of MetS and diabetes and the means of BMI, waist circumference, systolic blood pressure, diastolic blood pressure, fasting glucose, triglycerides, HDL cholesterol, high-sensitivity C-reactive protein, and white blood cell count were 7.2%, 8.1%, 21.6 kg/m², 80.5 cm, 118 mmHg, 75 mmHg, 96.7 mg/dl, 113 mg/dl, 58.8 mg/dl, 0.61 mg/l, and 5,571/l-6, respectively, in men with the lowest quartile of %VC ($n = 447$) and 4.7% ($P = 0.12$ compared with the lowest quartile of %VC), 2.7% ($P = 0.0003$), 22.3 kg/m² ($P < 0.0001$), 81.9 cm ($P = 0.0006$), 120 mmHg ($P = 0.054$), 76.5 mmHg ($P = 0.024$), 93.8 mg/dl ($P = 0.003$), 106 mg/dl ($P = 0.073$), 60.8 mg/dl ($P = 0.054$), 0.46 mg/l ($P = 0.014$), and 5,363/l-6 ($P = 0.032$), respectively, in men with the highest quartile of %VC ($n = 449$). Thus, lower %VC may be associated with leanness and possibly with lower blood pressure, but it also may possibly be associated with higher fasting glucose, higher triglycerides, lower HDL cholesterol, and inflammation (4) in nonobese Japanese men, which indicates a partial association of lower %VC with insulin resistance (5). However, the association between lower vital capacity and diabetes in nonobese Japanese men may involve factors other than MetS or insulin resistance, and causal relationships cannot be derived from these cross-sectional relationships.

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DOI: 10.2337/dc09-1457

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Acknowledgments—No potential conflicts of interest relevant to this article were reported.

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