

The Relationship between Lung Function and Metabolic Syndrome in Obese and Non-Obese Korean Adult Males (*Korean Diabetes J* 2010;34:253-60)

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We appreciate the comments on our study “The Relationship between Lung Function and Metabolic Syndrome in Obese and Non-Obese Korean Adult Males,” which was published in *Korean Diabetes J* 2010;34:253-260.

We reported that insulin resistance, and other metabolic risk factors appear to be related to forced vital capacity (FVC), irrespective of obesity in Korean males.

The age, height, and disease were the major determinants of ventilatory function [1]. In our study, there was a significant difference of age between metabolic syndrome (MetS) and non-MetS. So, we studied the relationship between MetS and FVC after adjusting for age. After adjusting age, there was still a significant difference in FVC between MetS and non-MetS groups (93.1 ± 12.1 vs. 97.0 ± 11.5 , $P < 0.05$). Furthermore, insulin resistance and other metabolic components such as waist circumference were independently associated with FVC in a multi-linear regression analysis after adjusting for age and height, the major determinants of ventilatory function, and this was consistent with previous studies [2–5].

It has been reported that lung function is affected by several factors such as body composition and fat distribution, physical activity level, handgrip strength and respiratory muscle power [6–9]. Our study was performed on a limited cross-section of the population, so we could not control the potential biases due to differences in physical activity or respiratory muscle power.

However, several studies have reported that insulin resistance is independently associated with lung function [3,10]. These studies reported that the lung function is still inversely associated with insulin resistance after adjusting for compounding factors such as age, height, smoking, and physical activity. Furthermore, Lazarus et al. [11,12] reported that skeletal muscle weakness served as a marker for future risk of insulin resistance, and that impaired lung function can aid in the prediction of development of insulin resistance. They suggested that some metabolic change that eventually leads to insulin resistance may initially induce diminished muscle strength and diminished ventilatory function [12]. So diminished muscle strength may be not confounding factor, but an early marker of insulin resistance.

Several reports have suggested that impaired lung function is associated with glucose intolerance, hypertension, and cardiovascular disease, and that lung function is a reliable long-term predictor of mortality in the general population.

We suggested that decreased FVC is associated with increased metabolic risk and insulin resistance in Korean males. Further prospective study to elucidate the relationship between lung function and metabolic risk is needed.

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