

Humidity influences exercise capacity in subjects with Exercise-Induced Broncho - Constriction (EIB)

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■ **ABSTRACT**

The primary aim of the present study was to examine the effect of changing the humidity of the environmental air upon exercise capacity measured by peak oxygen uptake ($\dot{V}O_{2\text{peak}}$), peak ventilation ($\dot{V}E_{\text{peak}}$) and peak running speed (V_{peak}) and secondarily to assess the influence of environmental humidity upon EIB in subjects suffering from EIB. Twenty subjects (10–45 years old, male/female:13/7) with diagnosed EIB performed exercise testing under standardised, regular environmental conditions, 20.2°C (± 1.1) and 40 per cent (± 3.3) relative humidity [mean (\pm sd)] and under standardised humid environmental conditions, 19.9°C (± 1.0) and 95 per cent (± 1.7) relative humidity in random order on separate days. Lung function was measured before and 1, 3, 6, 10 and 15min after exercise. Heart rate (HR), oxygen uptake ($\dot{V}O_2$), respiratory gas exchange ratio (RER), breathing frequency (BF) and minute ventilation ($\dot{V}E$) were measured during exercise. The results were identified that $\dot{V}O_{2\text{peak}}$ and V_{peak} increased significantly from 40 per cent to 95 per cent relative humidity of the environmental air, 4.5 per cent and 5.9 per cent, respectively ($P=0.001$). HR_{peak} increased significantly in the humid environment, while BF_{peak} decreased significantly. The conclusion that exercises capacity ($\dot{V}O_{2\text{peak}}$ and V_{peak}) markedly improved during exercise in humid air in subjects with EIB, whereas EIB was reduced to the half.

■ **KEY WORDS** : Peak oxygen uptake, Exercise capacity, Environmental humidity, Exercise-induced broncho-constriction

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