Aust J Sci Med Sport. 1995 Sep;27(3):51-5. Links

Comparison of maximal oxygen consumption with oral and nasal breathing.

Morton AR, **King K**, **Papalia S**, **Goodman C**, **Turley KR**, **Wilmore JH**.

University of Western Australia, Perth, Australia.

The major cause of exercise-induced asthma (EIA) is thought to be the drying and cooling of the airways during the 'conditioning' of the inspired air. Nasal breathing increases the respiratory system's ability to warm and humidity the inspired air compared to oral breathing and reduces the drying and cooling effects of the increased ventilation during exercise. This will reduce the severity of EIA provoked by a given intensity and duration of exercise. The purpose of the study was to determine the exercise intensity (%VO2 max) at which healthy subjects, free from respiratory disease, could perform while breathing through the nose-only and to compare this with mouth-only and mouth plus nose breathing. Twenty subjects (11 males and 9 females) ranging from 18-55 years acted as subjects in this study. They were all non-smokers and non-asthmatic. At the time of the study, all subjects were involved in regular physical activity and were classified, by a physician, as free from nasal polyps or other nasal obstruction. The percentage decrease in maximal ventilation with nose-only breathing compare to mouth and mouth plus nose breathing was three times the percentage decrease in maximal oxygen consumption. The pattern of nose-only breathing at maximal work showed a small reduction in tidal volume and large reduction in breathing frequency. Nasal breathing resulted in a reduction in FEO2 and an increase in FECO2. While breathing through the nose-only, all subjects could attain a work intensity great enough to produce an aerobic training effect (based on heart rate and percentage of VO2 max).

PMID: 8599744 [PubMed - indexed for MEDLINE]