

Exercise-induced bronchoconstriction results from the alteration of normal lung physiology occurring with evaporative water loss, thermal changes, and irritant exposure induced by a large increase in minute ventilation and demand on the respiratory system to heat and humidify air with exercise-related hyperpnea.[9][10][1] Ventilation increases by 200 L/min, and airway cooling with mucosal dehydration occur. As cells are dehydrated, there is an increase in osmolality, and the cells shrink in size, leading to an increase in cough, mucus, and loss of the physical barrier function of the epithelium.[9] Decreased osmolality and increased electrolyte concentrations are thought to cause a regulatory increase in cell volume pulling fluid from the submucosal layer resulting in edema and release of inflammatory mediators, including histamine, leukotrienes, cysteine, tryptase, prostaglandins and mast cell degranulation.