

***Training to yoga respiration selectively increases respiratory sensation in healthy man. Villien F, Yu M, Barthelemy P, Jammes Y. Respir Physiol Neurobiol. 2005 Mar;146(1):85-96.***

Because yoga practitioners think they are benefiting from their breath training we hypothesized that yoga respiration training (YRT) could modify the respiratory sensation. Yoga respiration (YR) ("ujjai") consisted of very slow, deep breaths (2-3 min(-1)) with sustained breath-hold after each inspiration and expiration. At inclusion in the study and after a 2-month YRT program, we determined in healthy subjects their eupneic ventilatory pattern and their capacity to discriminate external inspiratory resistive loads (respiratory sensation), digital tactile mechanical pressures (somesthetic sensation) and sound-pressure stimulations (auditory sensation). Data were compared to a gender-, age-, and weight-matched control group of healthy subjects who did not undergo the YRT program but were explored at the same epochs. After the 2-month YRT program, the respiratory sensation increased. Thus, both the exponent of the Steven's power law ( $\Psi = k\Phi^n$ ) and the slope of the linear-linear plot between  $\Psi$  and mouth pressure ( $P_m$ ) were significantly higher, and the intercept with ordinate axis of the  $\Psi$  versus  $P_m$  relationship was lower. After YRT, the peak  $P_m$  developed against inspiratory loads was significantly lower, reducing the load-induced activation of respiratory afferents. YRT induced long-lasting modifications of the ventilatory pattern with a significant lengthening of expiratory duration and a modest tidal volume increase. No significant changes in somesthetic and auditory sensations were noted. In the control group, the respiratory sensation was not modified during a 15-min period of yoga respiration, despite the peak  $P_m$  changes in response to added loads were then significantly reduced. These data suggest that training to yoga respiration selectively increases the respiratory sensation, perhaps through its persistent conditioning of the breathing pattern.