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Lung density is not altered following intense normobaric hypoxic interval training in competitive female cyclists.

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Noninvasive imaging techniques have been used to assess pulmonary edema following exercise but results remain equivocal. Most studies examining this phenomenon have used male subjects while the female response has received little attention. Some suggest that women, by virtue of their smaller lungs, airways, and diffusion surface areas may be more susceptible to pulmonary limitations during exercise. Accordingly, the purpose of this study was to determine if intense normobaric hypoxic exercise could induce pulmonary edema in women. Baseline lung density was obtained in eight highly trained female cyclists (mean \pm SD: age = 26 \pm 7 yr; height = 172.2 \pm 6.7 cm; mass = 64.1 \pm 6.7 kg; $V_{O_2\max}$ = 52.2 \pm 2.2 ml.kg⁻¹.min⁻¹) using computed tomography (CT). CT scans were obtained at the level of the aortic arch, the tracheal carina, and the superior end plate of the tenth thoracic vertebra. While breathing 15% O₂, subjects then performed five 2.5-km cycling intervals [mean power = 212 \pm 31 W; heart rate (HR) = 94.5 \pm 2.2%HR_{max}] separated by 5 min of recovery. Throughout the intervals, subjects desaturated to 82 \pm 4%, which was 13 \pm 2% below resting hypoxic levels. Scans were repeated 44 \pm 8 min following exercise. Mean lung density did not change from pre (0.138 \pm 0.014 g/ml)- to postexercise (0.137 \pm 0.011 g/ml). These findings suggest that pulmonary edema does not occur in highly trained females following intense normobaric hypoxic exercise.