Commentary: Prehabilitation for increasing ventilatory efficiency before lung resection: Amazing concept, but we're not there yet!

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Gravier and colleagues¹ report on a cohort of 50 patients who underwent prehabilitation by high-intensity interval training (HIIT) before lung resection for non-small cell lung cancer. The article addresses an important issue in lung cancer surgery; however, because of its retrospective nature, it is difficult to determine whether successful prehabilitation (>15 sessions) had a significant clinical impact. The investigators found no favorable effect of HIIT on the linear regression of the ratio between the increase in minute ventilation and the expired carbon dioxide flow (VE/VCO₂) slope, but there was a positive effect on maximal oxygen uptake peak. This is a more commonly used measure for planning treatment strategies along with forced expiratory volume in 1 second and diffusing capacity of the lung for carbon monoxide. Of note, in this limited cohort, the diffusing capacity of the lung for carbon monoxide was low. According to the authors, the VE/VCO₂ slope was chosen as a primary end point because it has attracted interest by several teams and could be a powerful statistical marker of complications. Unfortunately, there was no significant difference in postoperative length of stay or complications between those undergoing more than 15 versus less than 15 sessions. However, those with greater than 15 sessions numerically had less respiratory complications (58.3% vs 37%). The small sample size of the study may have not allowed for significant differences to be obtained.

The concept of prehabilitation to increase ventilatory efficiency before lung resection for non-small cell lung cancer has merit and may be beneficial,²⁻⁴ similar to the way it has been shown to be valuable in chronic respiratory diseases and nonthoracic surgery.^{5,6} The future focus should be on the determination of the optimal protocols,

Right upper lobe Pancoast, subclavian artery, superior vena cava resection, and reconstruction.

Central Message

Prehabilitation before lung resection may be beneficial in increasing ventilatory efficiency. Optimal protocols need to be developed.

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duration, and frequency of HIIT training in larger, high-powered controlled trials to improve results after lung resection surgery for lung cancer. At the Université de Montréal, we have begun enrolling in the randomized controlled trial “Preoperative Inspiratory Muscle Training Program to Prevent Pulmonary Complications After Thoracic Surgery (CT0076)” ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT03747380) Identifier: NCT03747380; <https://clinicaltrials.gov/ct2/show/NCT03747380>), looking to recruit 200 patients over 8 months to show a 50% decrease in the rate of complications at 30 days.⁷ As of today, we're not there yet!

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