

CRYO NERVE BLOCK THERAPY

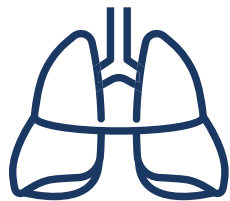
For Pain Management and Lung Function

Incentive Spirometry

Incentive spirometry, using a handheld device called a spirometer, is a widely adopted breathing technique which measures inspiratory capacity of the lungs.¹

Spirometer range is 0 cubic centimeters to 4000 cubic centimeters. Higher values achieved with incentive spirometry are indicative of improved breathing and lung function.

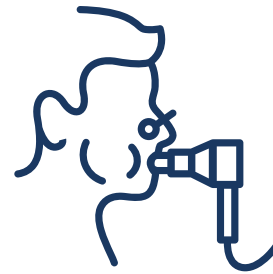
Use of incentive spirometry can help patients, who have undergone thoracic surgery, maintain lung strength and reduce risk of post-operative pulmonary complications, like pneumonia and atelectasis, known as lung collapse.³



Pain after thoracic surgery can limit the ability to inhale or deep breathe.^{4,5}

FEV1

A spirometer measures **forced expiratory volume in one second (FEV1)** which is how much air a person can exhale in the first second after taking in a deep breath in and then forcefully exhaling as much as possible.²



The application of Cryo Nerve Block (cryoNB) during thoracic procedures has been shown to reduce post-operative pain and improve pulmonary function recovery as measured with incentive spirometry.^{2,4}

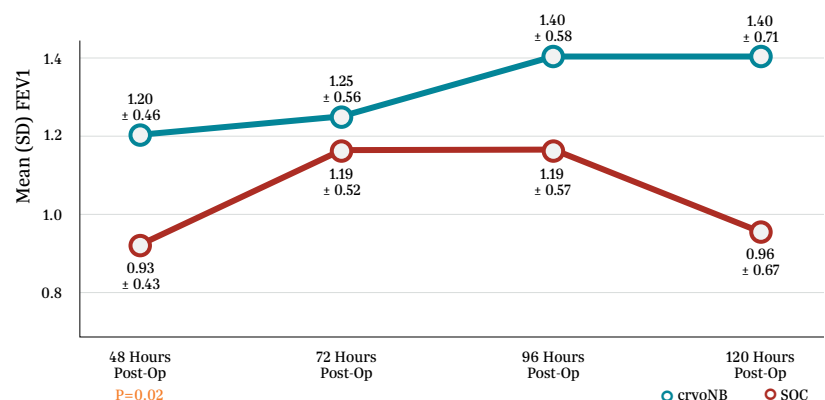
Pulmonary Function After cryoNB

Lau, W.C. et al. (2021)²

FROST Trial

- Prospective
- Multicenter
- Randomized (3:1)
- 84 patients underwent unilateral thoracotomy cardiac procedures with cryoNB (n=65) or without cryoNB (n=19)
- Post-operative FEV1 significantly improved at 48 hours and was sustained over the entire 120-hour hospital length of stay

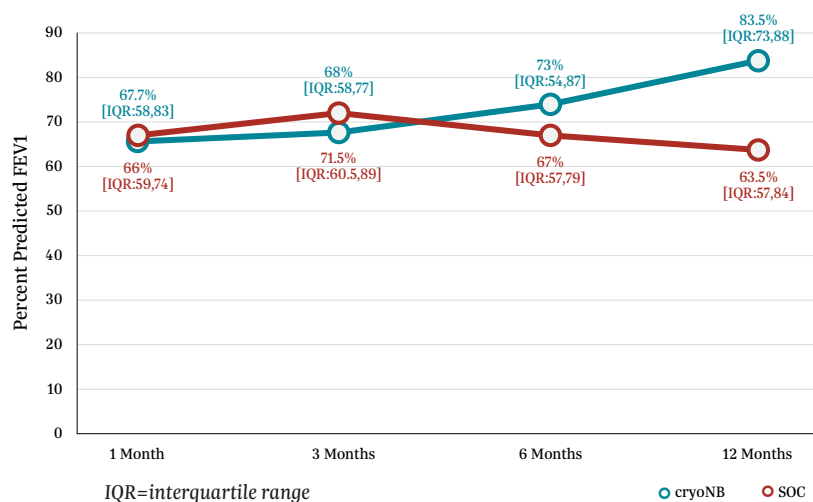
Respiratory function (FEV1) through 120 hours post procedure



Pulmonary Function After cryoNB continued

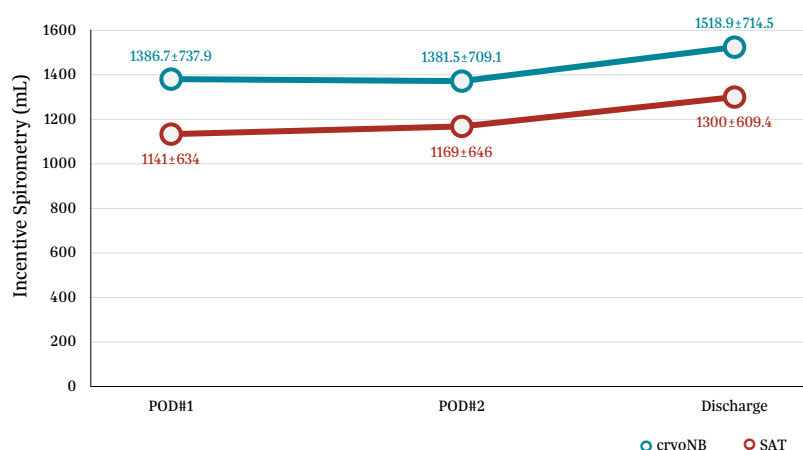
Koons, B. et al. (2023)⁶

- Retrospective
- Single center
- Non-randomized
- 102 patients underwent lung transplantation with or without intraoperative cryoNB therapy of the intercostal nerves
- Predicted median FEV1 improved post-operatively at six and 12 months in patients who underwent cryoNB compared to standard of care (SOC)



O'Connor, L.A. et al. (2022)⁷

- Retrospective
- Single center
- Non-randomized
- 137 patients underwent thoracic surgery with intraoperative cryoNB (n=80) or standard analgesic treatment (SAT, n=57)
- Post-operative pulmonary function, measured with spirometry, demonstrated improvements in the cryoNB group all time points compared to SAT through discharge



POD=post-operative day; SAT=standard analgesic treatment patients were managed with opioid and non-opioid medications

Values expressed as mean ± standard deviation and all p>0.05

Studies with a comparator which evaluated incentive spirometry (FEV1) were used to develop these graphs.

EU Indications: AtriCure's cryoICE cryoSPHERE cryoablation probes are sterile, single use devices intended for use in blocking pain by temporarily ablating intercostal peripheral nerves. Please review the Instructions for Use for a complete listing of contraindications, warnings, precautions and potential adverse events prior to using these devices.

¹Direct visualization, in this context, requires that the surgeon is able to see the targeted tissue for cryoablation directly or with assistance from a camera, endoscope or other similar optical technology.

References

- ¹Lawrence, V.A. et al. (2006). *Ann Intern Med*, 144(8):596-608.
- ²Lau, W.C. et al. (2021). *Pain Ther*, 10:1579-1592.
- ³Harris, D.J. et al. (2015). *Reg Anesth Pain Med*, 40(3):232-238.
- ⁴Prasanti, A.K. et al. (2021). *Respiratory Care*, 66(2):327-333.
- ⁵Moorjani, N. et al. (2001). *Eur J Cardiothorac Surg*, 20(3):502-507.
- ⁶Koons, B. et al. (2023). *JTCVS Open*, 13:444-456.
- ⁷O'Connor, L.A. et al. (2022). *J Surg Res*, 274:232-241.

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