

# Effects of Breathing Exercises on Patients With Lung Cancer

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**PROBLEM IDENTIFICATION:** To evaluate the effects of breathing exercises on dyspnea, six-minute walk distance (6MWD), anxiety, and depression in patients with lung cancer.

**LITERATURE SEARCH:** A systematic literature search of the Cochrane Library, Web of Science, Embase®, PubMed®, Weipu, Wanfang, and Chinese National Knowledge Infrastructure databases was performed for publications dated prior to April 6, 2018.

**DATA EVALUATION:** The meta-analysis was performed using Review Manager and Stata.

**SYNTHESIS:** 15 randomized controlled trials with a total of 870 participants met the inclusion criteria. The findings suggest that breathing exercises have positive effects on dyspnea and 6MWD, but not on anxiety and depression. Subgroup analyses showed that breathing exercises combined with other exercises yield similar beneficial effects on dyspnea and 6MWD. In addition, breathing exercises in the surgery subgroup could significantly improve dyspnea and 6MWD. Dyspnea in the other treatment approaches subgroup was significantly improved, and 6MWD did not increase significantly.

**IMPLICATIONS FOR NURSING:** Breathing exercises can be considered as a conventional rehabilitation nursing technique in clinical practice, and nurses should be aware of the importance of breathing exercises.

**KEYWORDS** lung cancer; breathing exercises; meta-analysis

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Lung cancer is not only one of the most common malignancies in the world, but it is also the number one cause of cancer-related death in the world (Mao, Yang, He, & Krasna, 2016; World Health Organization [WHO], 2019). In the past few years, the global burden of pulmonary cancer has been increasing, and the disease remains a main threat to public health worldwide (Gouveinhas et al., 2018; WHO, 2019). The treatments for lung cancer are surgery, chemotherapy, and radiation therapy. They aim to cure malignant tumors derived from lung tissue or to relieve the adverse effects (Kim, Boffa, Wang, & Detterbeck, 2012). Surgery is the optimal treatment for precancerous lesions and early- to middle-stage lung cancers (Boffa et al., 2008; Kim, Detterbeck, et al., 2012). However, many patients with advanced lung cancer refuse surgery because of the increased risk of postoperative pulmonary complications and lung function impairment; therefore, they choose chemotherapy, radiation therapy, and other treatment approaches (Baser et al., 2006; Boffa et al., 2008; Kim, Detterbeck, et al., 2012).

Regardless of the type of lung cancer treatment, the development of cancer and the invasion of lung tissue or surrounding tissues by cancer cells can interfere with normal breathing and lead to dyspnea or shortness of breath. In addition, most patients often experience other severe symptoms, such as decreased exercise capacity, anxiety, and depression, which lead to a significant decline in the quality of life (Ha, Ries, Mazzone, Lippman, & Fuster, 2018; Molassiotis, Charalambous, Taylor, Stamataki, & Summers, 2015).

Breathing is vital to maintaining the operation of the body organs and systems. However, surgery and other treatments targeting lungs inevitably present a substantial risk to the respiratory function of patients. The purpose of breathing exercises is to correct the incorrect breathing patterns, reestablish correct breathing methods, increase diaphragmatic activity, elevate alveolar ventilation, reduce energy consumption during the respiration, and ease shortness of breath in patients with lung cancer (Wei et al., 2013).