Respiratory Muscle Stretch Gymnastics: an Epoch to Progress Further

Pinki Bhasin\textsuperscript{a*}, Sumant Mishra\textsuperscript{b}.

Chronic obstructive pulmonary disease (COPD) is a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. Exacerbations and comorbidities contribute to the overall severity in individual patients.\textsuperscript{1} COPD prevalence, morbidity, and mortality vary across countries and across different groups within countries but, in general, are directly related to the prevalence of tobacco smoking, although, in many countries, air pollution resulting from the burning of wood and other biomass fuels has also been identified as a COPD risk factor\textsuperscript{2} and remains a major public health problem\textsuperscript{3}.

The Global Burden of Disease Study has projected that COPD, which ranked sixth as the cause of death in 1990, will become the third leading cause of death worldwide by 2020.\textsuperscript{3,4} By tackling the systemic consequences and comorbidities of COPD, and the behavioral and educational deficiencies associated with it, comprehensive pulmonary rehabilitation programs improve the effects of pharmacologic treatment in these patients, increase exercise performance, reduce symptoms, improve emotional status and health-related quality of life.\textsuperscript{5-8} Pulmonary rehabilitation conventionally includes elements of physical therapy, exercise conditioning, and education, in addition, respiratory muscle stretch gymnastics has recently been used.\textsuperscript{9}

Respiratory Muscle Stretch Gymnastics (RMSG) is designed to stretch inspiratory chest wall muscles during inspiration and expiratory chest wall muscles during expiration, has been advocated in the rehabilitation of patients with COPD.\textsuperscript{9} RMSG stretches chest wall respiratory muscles during contraction and is considered to be a safe and effective physical conditioning method. It has been proposed as an additional form of rehabilitation for patients with COPD and is designed to decrease chest wall stiffness, particularly in the chest wall respiratory muscles.\textsuperscript{10} The present article intends to reveal the benefits and effectiveness of RMSG, as there is not as much of awareness of the subject. The following five patterns \textsuperscript{9,14,18} of RMSG have been used in the previous studies:

Pattern 1: ‘Elevating and pulling back the shoulders’ As you slowly breathe in through your nose, gradually elevate (shrugging) and pull back (lowering) both shoulders. After taking a deep breath, slowly breathe out through your mouth, relax and lower your shoulders.

Pattern 2: ‘Stretching the upper chest’ Place both hands on your upper chest, uncrossed. Gradually pull your elbows back and down while lifting your chin along with inhaling a deep breath through your nose. Expire slowly through your mouth and relax.

ABSTRACT

This article outlines the use of respiratory muscle stretch gymnastics for chronic obstructive pulmonary disease.

Key words: pulmonary rehabilitation, exercise therapy, chronic obstructive pulmonary disease, respiratory muscle training.

Authors’ information:

b- Physiotherapist, Bapu Nature Cure Hospital, New Delhi, India.
a* - Corresponding author. Assistant Professor, Department of Physiotherapy, Srinivas College of Physiotherapy and Research Center, Pandeshwar, Mangalore, India.

E-mail for correspondence: bhasinpinki@yahoo.com
Pattern 3: ‘Stretching the back muscle’ Hold your hands clasped together in front of your chest. As you slowly breathe in through your nose, move your hands frontwards and down, stretching your back. After a deep inspiration, slowly breathe out and resume the original position.

Pattern 4: ‘Stretching the lower chest’ Hold the ends of a face towel with both hands out stretched at shoulder height. After taking a deep breath, move your arms up while breathing out slowly. After deep expiration, lower your hands and breathe normally.

Pattern 5: ‘Elevating the elbow’ Hold one hand behind the head (shoulder in flexion, adduction, internal rotation and elbow in flexion). Take a deep breath through your mouth, stretch your trunk by raising your elbow (shoulder moving into a greater range of flexion) as high as is easily possible. Return to the original position while breathing normally. Repeat the process using the alternate hand behind the head.

The effect of RMSG and diaphragmatic breathing on respiratory pattern in patients with COPD was investigated, it was concluded that RMSG may have a beneficial effect on the respiratory pattern. RMSG may be useful in pulmonary rehabilitation was concluded in a study done on 13 patients with COPD for a period of 4 weeks. The distance walked in 6 min was increased and dyspnea after a 6-minute walk (6MWD) decreased significantly. Also, the quality of life as measured with the Chronic Respiratory Disease Questionnaire was found to have improved significantly. A short-term pulmonary rehabilitation program for 15 in-patients with chronic respiratory failure due to pulmonary emphysema was conducted, wherein RMSG was one of the components of the rehab program. It was observed that dyspnea was decreased and functional exercise capacity was increased. In addition, it was found that the TLC and RV were decreased. Moreover, RMSG has been suggested as a novel technique for stretching the chest wall, in an attempt to reduce morbidity in patients with COPD. It was found that to increase chest wall mobility, possibly by reducing chest wall elastance in patients with COPD. RMSG has also been effectual in reducing post-coronary artery bypass grafting pain (PCP), alleviating anxiety and tension, and improving ADL in patients undergoing coronary artery bypass grafting (CABG).

Thus, it can be acknowledged from the literature, that RMSG is effective in relieving dyspnea at rest and on exertion, improving the 6MWD, and can be employed as a novel method for stretching the chest wall muscles along with hold relax technique in patients with COPD. These affirmative effects of RSMG have not been uncovered in India; attention must be drawn to the demonstrated usefulness of this procedure. There is paucity of knowledge about the benefits of this technique among Physical Therapists. Studies must be conducted to reveal additional beneficial, constructive effects of RMSG and can be employed as one of the components of the rehabilitation program for patients with COPD or patients undergoing CABG and other thoracic surgeries.

CONFLICTS OF INTEREST

None identified and/or declared.

REFERENCES


