



Effects of Slow Deep Breathing Exercises in Patients with Coronary Artery Disease

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Abstract

Background: Cardiovascular diseases (CVDs) remain a leading cause of mortality and morbidity globally, often associated with autonomic dysfunction. This dysfunction manifests as reduced heart rate variability (HRV), indicating imbalanced autonomic nervous system activity. Deep breathing (DB) techniques and yoga practices have been shown to enhance cardiovascular health by modulating autonomic function. Incentive spirometry (IS) is a widely used therapy in the management of postoperative and hospitalized patients with CVDs. This study aimed to evaluate the effects of IS combined with DB exercises on cardiovascular parameters in patients with coronary artery disease (CAD). **Method:** A quasi-experimental study design was employed, with 50 CAD patients divided equally into study and control groups. The study group received IS therapy along with DB exercises, while the control group received standard medical management. Various cardiovascular parameters, including heart rate, blood pressure, and electrocardiographic indicators, were measured pre- and post-intervention. **Results:** The results revealed significant improvements in cardiopulmonary parameters and electrocardiographic findings in the study group

compared to the control group. Specifically, participants in the study group exhibited increased HRV, improved blood pressure control, and favorable changes in electrocardiographic indices indicative of enhanced cardiac function. **Conclusion:** In conclusion, the findings suggest that the combination of IS therapy with DB exercises may offer substantial benefits in managing CAD by improving autonomic function and cardiovascular health. Further research is warranted to elucidate the underlying mechanisms and optimize the implementation of these interventions in clinical practice.

Keywords: Incentive spirometer, Coronary artery disease (CAD), Cardiopulmonary parameters, ECG findings.

Introduction

Cardiovascular mortality and morbidity are related to an increased risk of autonomic dysfunction, such as a decrease in heart rate variability. DB can control both excessively active sympathetic and underactive parasympathetic nerve activity, which will enhance cardiovascular health. Additionally, practicing yoga has been shown to adjust the brain toward pleasant states and a parasympathetically driven mode. breathing encouraged the vagal activation of the brain's gamma-aminobutyric acid pathways, which decreased tension and anxiety. Furthermore, the enhancement of the autonomic balance caused by DB appears to have a positive impact on the brain and cardiovascular system. (Russell, et, al.2017), (Shah, et, al.2019), (McCarty,et, al.2015)

The Incentive Spirometer (IS) has received extensive research in the inpatient context and is the cornerstone of therapy for postoperative and hospitalized patients. Stretching and opening constricted airways, helps the patient to inhale slowly and deeply

Significance | In this Quasi-Experimental Study, we have shown enhanced effect Cardiovascular Health in Coronary Artery Disease Patients Through Deep Breathing Exercises with Incentive Spirometry.

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