

EFFECT OF RMT ON OXYGEN UPTAKE AND VENTILATORY FUNCTION IN HEART FAILURE



Patients with congestive heart failure (CHF) may have reduced strength and endurance in inspiratory muscles, which may contribute to exercise intolerance due to fatigue and dyspnea. Exercise intolerance in general can be linked to a significant reduction in the quality of life for CHF patients, and it is therefore important to determine if the factors leading to this reduced capacity can be addressed and remedied.

One interesting and promising concept to explore when it comes to reinforcing strength and endurance in inspiratory muscles is something known as inspiratory muscle training. Inspiratory muscle training (IMT) has been tested to determine whether it can play a significant part in improving functional capacity, circulatory power, oscillatory ventilation, kinetics of oxygen consumption in the recovery period, and quality of life in patients with CHF and inspiratory muscle weakness. Let's take a look at the study below.

Key Findings

- Low respiratory muscle strength and endurance lead to exercise intolerance, dyspnea and fatigue in people with congestive heart failure (CHF).
- 12 weeks of RMT improved respiratory muscle strength, dyspnea, quality of life and exercise capacity.
- RMT also led to clinically relevant increases in peak oxygen uptake.

Patient Impact

RMT leads to clinically relevant improvements in ventilatory and respiratory function, exercise capacity and quality of life in people with CHF.

Study Methods

The following were assessed in the study over a period of 12 weeks:

- Pulmonary (forced vital capacity, FVC, and forced expiratory volume in 1s, FEV1s) function
- Respiratory (maximal inspiratory mouth pressure, P_{imax}) function
- Exercise capacity (6 minute walk test)
- Dyspnea
- Cardiopulmonary exercise testing
- Ventilatory efficiency
- Quality of life (QOL)

The above were assessed in CHF patients both before and after 12 weeks of IMT, and compared to a placebo-IMT control.

Study Results

IMT resulted in increased P_{imax} as well as in a 17% increase in peak oxygen uptake, and a 19% increase in the 6-min walk distance. It also led to a significant improvement in QOL and perceived dyspnea when compared to the control group.

In conclusion, IMT results in clinically relevant improvements in inspiratory muscle strength, respiratory and ventilatory function, exercise capacity, dyspnea and quality of life in patients with CHF and inspiratory muscle weakness.

References

Darnley GM, et al. Effects of resistive breathing on exercise capacity and diaphragm function in patients with ischaemic heart disease. Eur J Heart Fail. 1999 Aug;1(3):297-300.