

Non-invasive ventilation and physical exercise in patients with COPD [Article in German]

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The use of non-invasive ventilation (NIV) to improve physical activity in COPD patients has been addressed in several clinical investigations in the past. In general, NIV can be applied directly during exercise, but also intermittently when used for long-term treatment thereby aiming at improving physical activity during spontaneous breathing. There is increasing evidence that NIV enhances exercise capacity in COPD patients with a reduction of exercise-induced dyspnea when applied during exertion. Furthermore, physical training has been shown to produce positive results when training was performed under NIV-aided conditions. However, the results regarding tolerance of NIV, exercise ability and dyspnea are individually different. In most studies where NIV was applied during exercise, patients had no indication for long-term NIV, and patients were ventilated with low inspiratory pressures, which produced varying results. In contrast, the use of higher inspiratory pressures in hypercapnic COPD patients was more effective in enhancing exercise capacity. The intermittent application of NIV also positively affects exercise capacity in COPD patients, although different results were achieved with different ventilator strategies, mainly with a variety of inspiratory pressure levels. Different ventilation modes were used for NIV to aid exercise and for the intermittent approach in addition to different settings: CPAP, pressure support ventilation, proportional assist ventilation and controlled NIV. Therefore, it is still unclear how to define the best technique for NIV to be used in order to enhance exercise capability in COPD patients. Future studies are needed to define which subgroup of patients benefit from NIV in view of its effects on exercise. Further studies should also be aimed at clarifying which mode and which ventilator settings are most beneficial in improving exercise capability in COPD patients.

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