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## Exploring the Effect of Respiratory Muscle Training on a Paralympic Para-powerlifter: An Observational Case Analysis

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### Abstract

**Aim:** To examine whether a 14-week IMT programme improves respiratory muscle strength and pulmonary function in an elite female para powerlifter, and to discuss practical implications for training. **Materials & Method:** One 34-year-old international PP athlete completed twice-daily IMT (10 sessions·week<sup>-1</sup>) with a threshold device at 25–30% maximal inspiratory pressure (MIP). Spirometry [forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), FEV<sub>1</sub>/FVC] and maximum voluntary ventilation (MVV) were assessed, alongside MIP, at baseline and after 4, 8 and 14 weeks. Percentage changes were analysed descriptively. **Results:** All ventilatory variables except FVC showed small increases after four weeks of IMT, with FVC rising slightly by week eight then returning close to baseline by week fourteen. MVV showed minor fluctuations only. In contrast, MIP increased from 90 to 135 cmH<sub>2</sub>O after four weeks and remained clearly above baseline thereafter ( $\approx$ 122–128 cmH<sub>2</sub>O), indicating substantial gains in inspiratory muscle strength. No parallel improvement in bench-press performance was observed. **Conclusion:** In this para powerlifter, 14 weeks of low-intensity IMT produced meaningful increases in inspiratory muscle strength without clear changes in spirometric indices or lifting performance. IMT may help attenuate respiratory muscle fatigue during heavy bench-press training, but higher loads, volumes, or longer interventions may be required to elicit performance benefits.

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