

## Buteyko Breathing Technique Reduces Hyperventilation–Induced Hypocapnea and Dyspnoea after Exercise in Asthma.

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### Introduction

In Asthma, hyperventilation during and after exercise can increase the work of breathing and dyspnoea delaying recovery and leading to a worsening of asthma control. The Buteyko Breathing Technique (BBT) is gaining support as a complementary therapy to improve asthma control. Although the original hypothesis suggested that the BBT works by increasing carbon–dioxide (CO<sub>2</sub>) levels, research to date is yet to demonstrate this phenomenon.

### Study Design

We conducted a randomised, controlled trial exploring a 5–week course of BBT on post–exercise end–tidal CO<sub>2</sub> (EtCO<sub>2</sub>) and dyspnoea versus conventional therapy. Subjects underwent treadmill exercise testing to a symptom–limited maximum at baseline, 1 & 6 weeks.

### Results

Of 32 subjects enrolled, 20(15 female) completed the study (9 BBT vs 11 controls). Mean(SD) age was 48(15)yrs, BMI 28(5.6)kgm<sup>-2</sup>, FEV<sub>1</sub> 89 (24.7)%pred. EtCO<sub>2</sub> (mmHg) and Borg Breathlessness score at 5min post–exercise were significantly improved with BBT, \*p <0.05 (Repeated meas gen linear model).

### Impact of BBT on EtCO<sub>2</sub> and Breathlessness scores

BBT vs Controls	EtCO <sub>2</sub> peak exerc	EtCO <sub>2</sub> 1.5 mins post ex	EtCO <sub>2</sub> 2.5 mins post ex	Exerc time (mins)	Borg breathlessness 5 mins post ex
Baseline	35(4) vs 35(4)	38(6) vs 38(5)	35(5) vs 36(5)	5(3) vs 7(4)	0.8(0.8) vs 1.7(1.1)
1st week post	47(6) vs 40(3)	43(5) vs 36(4)	40(4) vs 34(4)	5(3) vs 6(3)	0.6(0.7) vs 1.5(0.7)
6 weeks post	46(8) vs 40(6)	43(4) vs 36(5)	39(5) vs 35(5)	7(4) vs 7(3)	1(1.3) vs 1.5(1.1)

\*p<0.05; Mean (SDev); BBT vs Controls

### Conclusion

Our study demonstrated the hypothesised physiology of BBT, improving hyperventilation induced hypocapnoea and breathlessness, following maximal exercise. By teaching patients to reduce hyperventilation of breathing (the rate & depth), BBT may reduce asthma symptoms and improve exercise tolerance and control.

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