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

G. Austin, DipPhys¹, C. Brown, BSc¹, T. Watson, PhD² and I. Chakravorty, PhD¹. Email: g.austin@nhs.net

¹PG Med Sch, Lister Hospital, Stevenage, Herts, United Kingdom and ²Physio Sch, U Hertfordshire, Hatfield, Herts, United Kingdom.

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 (CO2) 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 CO2 (EtCO2) 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−2, FEV1 89 (24.7)%pred. EtCO2 (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 EtCO2 and Breathlessness scores

<table>
<thead>
<tr>
<th></th>
<th>BBT vs Controls</th>
<th>EtCO2 peak exerc</th>
<th>EtCO2 1.5 mins post exerc</th>
<th>EtCO2 2.5 mins post exerc</th>
<th>Exerc time (mins)</th>
<th>Borg breathlessness 5 mins post exerc</th>
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</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td>35(4) vs 35(4)</td>
<td>38(6) vs 38(5)</td>
<td>35(5) vs 36(5)</td>
<td>5(3) vs 7(4)</td>
<td>0.8(0.8) vs 1.7(1.1)</td>
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<td>1st week post</td>
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<td>47(6) vs 40(3)</td>
<td>43(5) vs 36(4)</td>
<td>40(4) vs 34(4)</td>
<td>5(3) vs 6(3)</td>
<td>0.6(0.7) vs 1.5(0.7)</td>
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<td>6 weeks post</td>
<td></td>
<td>46(8) vs 40(6)</td>
<td>43(4) vs 36(5)</td>
<td>39(5) vs 35(5)</td>
<td>7(4) vs 7(3)</td>
<td>1(1.3) vs 1.5(1.1)</td>
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*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 hypernoea of breathing (the rate & depth), BBT may reduce asthma symptoms and improve exercise tolerance and control.

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