Do Breathing Patterns Affect Ratings of Perceived Exertion and Breathlessness?

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INTRODUCTION

- Breathing patterns can influence the perception of physical effort and breathlessness at rest and during exercise (1). For example, the rating of perceived exertion (RPE) was higher during oral-only breathing than oronasal (i.e., mouth and nose) breathing during a shuttle run test in young male adults (2).
- Nasal versus oral breathing reduces cardiorespiratory demands during exercise (3). However, it is unknown whether nasal versus oral breathing reduces the perception of physical effort and breathlessness in young male and female adults.

PURPOSE

- Therefore, the purpose of this study was to test the hypothesis that RPE and RPB would be lower with nasal versus oral breathing.

EXPERIMENTAL DESIGN

Part 1: Recruitment

- We enrolled 11 participants aged 18 - 20 years old with body mass index values of 19 - 26 kg/m^2.

Part 2: Resting Measurements

- We randomized the order of nose-only and mouth-only breathing periods (5 minutes each) between participants. We used an auditory metronome to keep participants' respiratory rate consistent, based on their 'free breathing' respiratory rate.
- Resting on a semi-recumbent bed, we attached a fabric respiration belt to measure respiratory rate and other equipment to monitor blood oxygen saturation, heart rate, and blood pressure (not reported on this poster).
- We asked participants to report a RPE (Figure 1) and rating of perceived breathlessness (RPB; Figure 2) at the end of two 5-minute rest periods.

Part 3: Submaximal Exercise

- We used the same breathing condition order as used during rest periods for two 7-minute bouts of exercise at 75 watts on a semi-recumbent cycle ergometer, with RPE and RPB reported in the last two minutes.

Figure 1:

Rating of Perceived Exertion	
6	No exertion
7	Extremely light
8	
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

Figure 2:

Rating of Perceived Breathlessness	
0	Nothing at all
0.5	Very, very light (just noticeable)
1	Very slight
2	Slight
3	Moderate
4	Somewhat severe
5	Severe
6	Very severe
7	
8	
9	Very, very severe (almost maximal)
10	Maximal

RESULTS

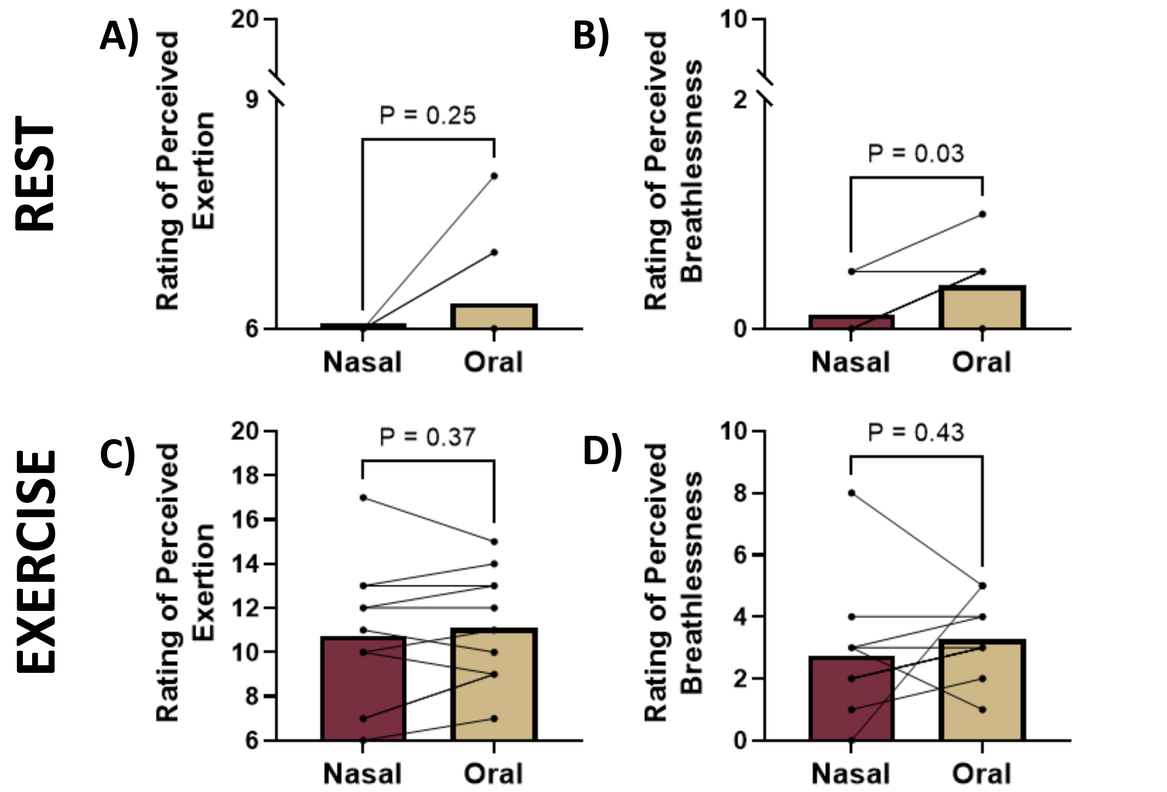

Figure 1. We found that resting RPB was higher during oral versus nasal breathing **(B)**. However, we did not observe differences in the remaining variables at rest **(A)** or during exercise **(C-D)**. We used a paired, two-tailed t-test for exercise RPE and Wilcoxon matched-pairs signed rank tests for all other variables because they failed (p>0.05) the Shapiro-Wilk normality test.

CONCLUSIONS

These preliminary findings suggest that while nasal breathing at rest can slightly reduce subjective ratings of breathlessness, it does not affect subjective ratings of exertion or breathlessness during submaximal exercise.

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