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INTRODUCTION

- The route of breathing can influence cardiovascular variables, like heart rate (HR), during exercise.
- One study found no difference in HR between nasal and oral breathing during maximal exercise, but the absolute metabolic demand was lower during nasal breathing (1).
- Also, some (2), but not all (3), studies suggest that nasal versus oral breathing elicits a higher HR during exercise.
- With conflicting results from past research, there is a need to understand if HR differs between nasal and oral-only breathing at rest and during exercise.

HYPOTHESIS

- Therefore, we tested the hypothesis that nasal compared with oral breathing would lead to different HR values at rest and during submaximal exercise.

METHODS

Participants

- We tested 12 adults (7 female, 5 male) aged 18 ± 1 years old with body mass index values of 23 ± 3 kg/m².

Resting

- 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 used an electrocardiogram to measure HR continuously. We report the HR from the final minute of each condition.

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. We report the HR from the final minute of each condition.

Statistics

- We used paired, two-tailed t-tests with significance set to $p < 0.05$.

RESULTS

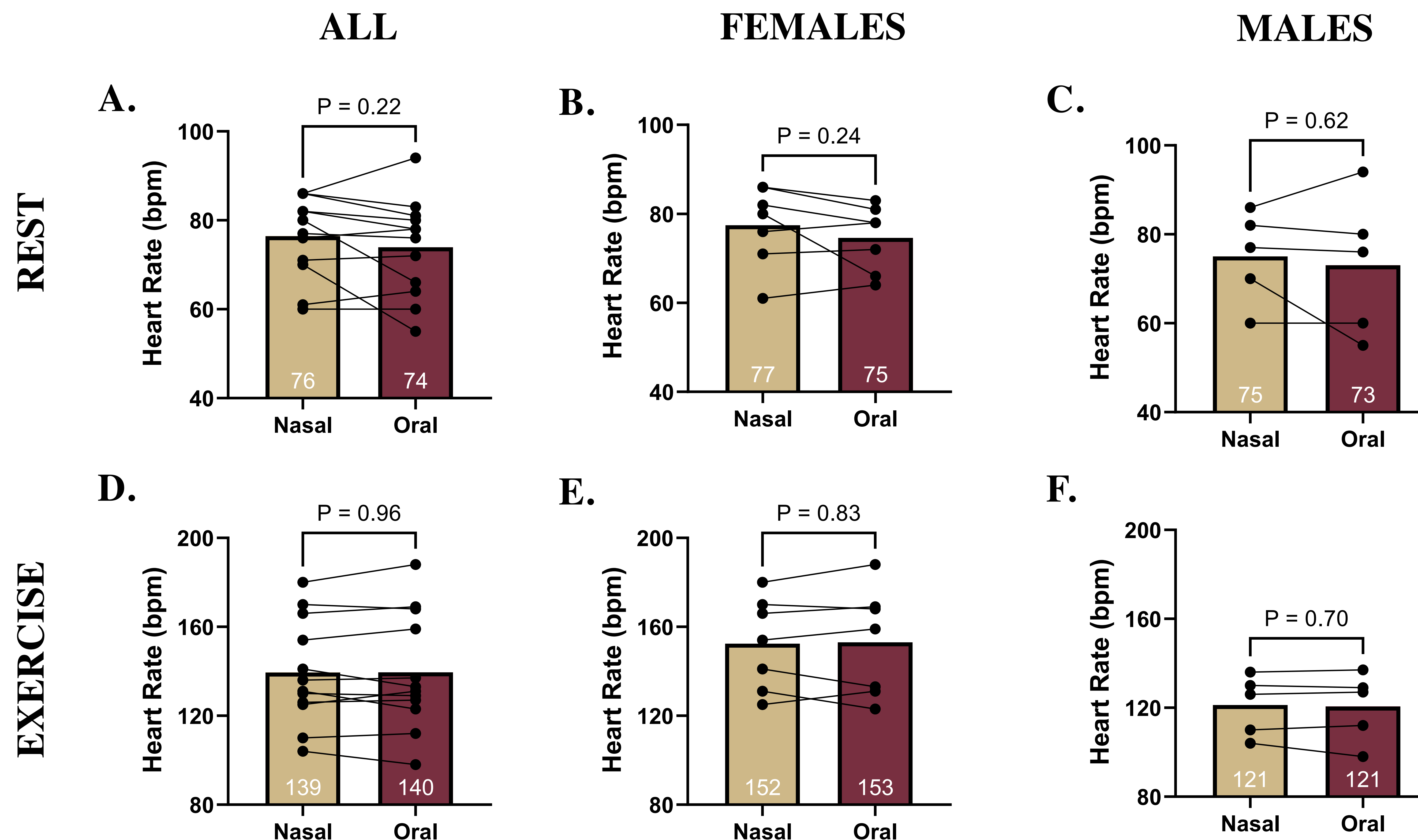


Figure 1. Rest: We found no difference in heart rate between nasal and oral breathing at rest (A). This was consistent within female (B) and male (C) participants. Respiratory rate was not different between conditions (nasal: 16 ± 4 vs. oral: 16 ± 3 bpm, $p=0.30$). Exercise: We found no difference in heart rate between nasal and oral breathing during exercise (D). This was consistent within female (E) and male (F) participants. Respiratory rate was not different between conditions (nasal: 26 ± 5 vs. oral: 25 ± 4 bpm, $p=0.19$).

CONCLUSION

Our preliminary findings suggest that there is no difference in heart rate between nasal and oral breathing at rest or during submaximal exercise.

REFERENCES

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