

# Cardiorespiratory responses upon increased metabolism in the Ornate Tinamou, *Nothoprocta ornata*

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## Background & Aim

The Ornate Tinamou (*Nothoprocta ornata*) lives at a high altitude in the South American Andes and is therefore exposed to a lower availability of atmospheric oxygen, i.e., chronic hypoxia. Interestingly enough, it has a small heart relative to its body size, indicating a decrease in cardiac output, resulting in a reduced ability in transporting oxygenated blood.

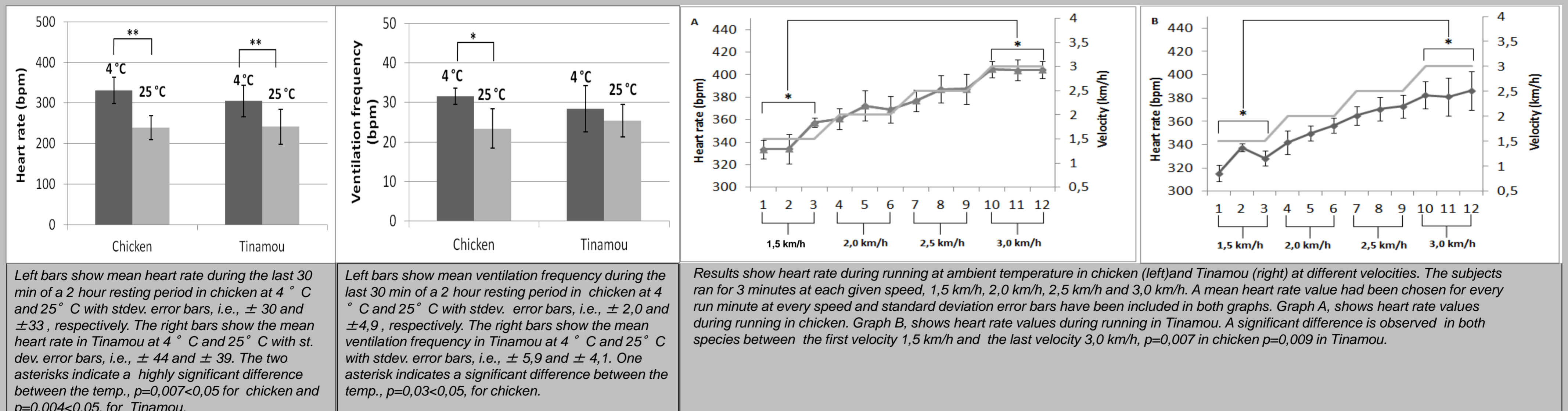
The aim of this project was to study what are the implications of having a smaller heart in a chronic hypoxic environment by monitoring heart rate and ventilation frequency:

- during resting at 4° C and 25° C to investigate how they cope with changes in metabolic rate
- during running at different velocities
- comparing results with the chicken (*Gallus gallus*).

## Methods

Electrodes were implanted transthoracically in the animal to monitor heart rate and ventilation frequency during resting at 4° C and 25° C and while running on a motorized treadmill at different velocities.

## Results



## Conclusion

Resting heart rate was significantly different between 4° C and 25° C in both animals, while ventilation frequency in the Tinamou did not show any significant difference. There was also a significant increase for both animals in heart rate during running. This suggests that the Tinamou can compensate for the limited cardiac output by increasing heart rate. However, future research should focus on studying other physiological mechanisms involved in the oxygen delivery to the tissues, e.g., blood oxygen affinity and arteriovenous difference in order to increase understanding of the physiology of the Tinamou.



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