

Conclusions

Heart rate was significantly different in both species during resting at different ambient temperatures which was not observed with ventilation frequency in the Tinamou. There was also a significant difference in heart rate between Tinamou and chicken during running. The results indicate that even though Tinamou has a small heart when compared to chicken, a significant increase in heart rate during exercise was obtained, indicating that the Tinamou is able to compensate for the limited cardiac output by increasing heart rate.

Further research must still focus on studying other physiological mechanisms, involved in the oxygen delivery to the tissues, e.g. blood affinity, arteriovenous difference etc.

Acknowledgements

I would like to give many thanks to my supervisor Dr. Jordi Altimiras, Dr. Alvaro Garitano for lending me the *N. ornatas* and my fellow co-workers at Universidad Mayor de San Andrés, La Paz Bolivia.

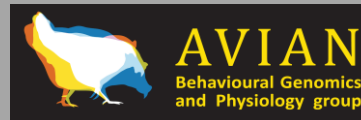


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Cardiorespiratory responses upon increased metabolism in the Ornate Tinamou, *Nothoprocta ornata*



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Master's thesis project:

Molecular genetics and physiology 2012

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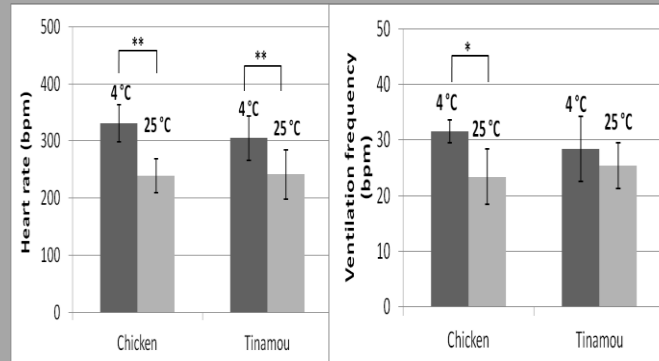
Background

Although the Bolivian Ornate Tinamou (*Nothoprocta ornata*) lives at a high altitude and is exposed to a lower availability of atmospheric oxygen, i.e., chronic hypoxia, it has a small heart relative to its body size. This is because a small heart indicates a low stroke volume, which in turn leads to a decrease in cardiac output. This will reduce the ability in deliver oxygenated blood to tissues and organs.

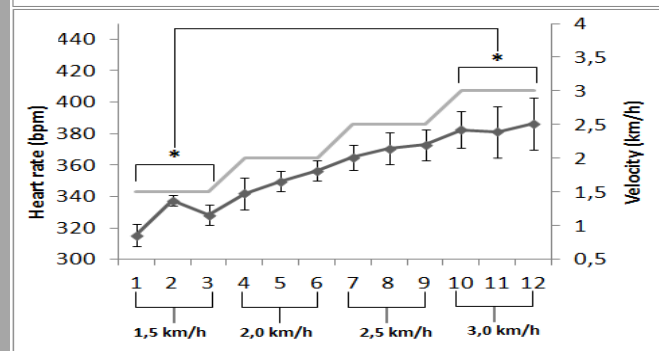
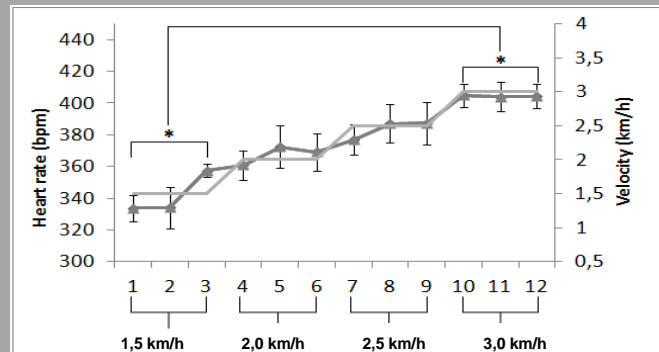
The aim of this study was to investigate the physiological effects on the cardiovascular and respiratory system by monitoring heart rate and ventilation frequency, in the Bolivian, highland living, Tinamou during resting at two different temperatures 4°C and 25°C and during running. The obtained results were later compared with results from chicken (*Gallus gallus*).

Results

Heart rate is significantly higher at 4°C than at 25°C in both species. Ventilation frequency is only significant in chicken.



Heart rate is significantly higher between 1,5 km/h and 3,0 km/h in both animals.



Methods

Before measurements of heart rate and ventilation frequency took place, female adult Tinamous' and female adult chickens' were trained for 2 months to run on a motorized treadmill 3 minutes at 1.5, 2.0, 2.5, 3.0 km/h.

Before starting the protocol, electrodes were implanted transthoracically in the animal to monitor heart rate and ventilation frequency during resting at 4°C in a freezer and 25°C inside an incubator, running on a treadmill at different velocities.