Emperor Penguin can stay under water for up to 27 minutes, new research reveals
1 September 2013

They measured heart rates using an electrocardiogram (ECG) recorder and looked at dive behaviour with a time depth recorder (TDR) and found that the penguins slow their heart from the normal rate of around 70 beats per minute to as low as 10 beats per minute.

Emperor Penguins also have unusually structured hemoglobin to allow it to function at low oxygen levels, solid bones to reduce barotrauma - physical damage to body tissues caused by a difference in pressure between a gas space inside, or in contact with the body, and the surrounding fluid, and the ability to reduce metabolism and to shut down non-essential organ functions.

The profound decline in heart rate - known as bradycardia – decreases oxygen consumption, conserves the respiratory and blood oxygen stores, and isolates muscle, which must rely instead on its own oxygen store which is bound to the muscle protein, myoglobin.

Although this heart rate response contrasts with other birds and terrestrial mammals, it is similar to the dive response of marine mammals.

More information: Britain is to host the International Penguin Conference from 2 to 6 September in Bristol.

Provided by University of Bristol

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.