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Study examined effects of treadmill exercise on the Savannah monitor lizard

Elevated intra-abdominal pressure limits venous return during exercise in *Varanus exanthematicus*.

According to scientists in the United States, "The effects of treadmill exercise on components of the cardiovascular (venous return, heart rate, arterial blood pressure) and respiratory systems (minute ventilation, tidal volume, breathing frequency, oxygen consumption, carbon dioxide production) and intra-abdominal pressure were investigated in the Savannah monitor lizard, *Varanus exanthematicus* B, at 35 degrees C."

S.L. Munns and colleagues of the University of California in Irvine reported, "Compared with resting conditions, treadmill exercise significantly increased lung ventilation, gular pumping, intra-abdominal pressure, mean arterial blood pressure and venous return (blood flow in the post caval vein). However, venous return declines at high levels of activity, and mean arterial pressure and venous return did not attain peak values until the recovery period, immediately following activity."

"Elevating intra-abdominal pressure in resting lizards (via saline infusion) resulted in significant reductions in venous return when the transmural pressure of the post caval vein became negative (i.e., when intra-abdominal pressure exceeded central venous pressure)," the scientists noted.

They concluded, "Together these results suggest that increments in intra-abdominal pressure compress the large abdominal veins and inhibit venous return. During locomotion, the physical compression of the large abdominal veins may represent a significant limitation to cardiac output and maximal oxygen consumption in lizards."

Munns and colleagues published their study in the *Journal of Experimental Biology* (Elevated intra-abdominal pressure limits venous return during exercise in *Varanus exanthematicus*. *J Exp Biol*, 2004;207(23):4111-4120).

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