

(69) REASONABLE OVEREXERTION, A METHOD FOR CAPTURING STEPPE EAGLES (*AQUILA NIPALENSIS*) IN THE WILD: EVALUATION OF PHYSIOLOGICAL STRESS AND EFFORT RECUPERATION

STÉPHANE OSTROWSKI, STÉPHANE HÉMON, AND PATRICK PAILLAT, National Wildlife Research Center, PO Box 1086, Taif, Saudi Arabia

Abstract: The use of a capture-technique based on human induced overexertion was evaluated on 10 steppe eagles (*Aquila nipalensis*). In order to assess the degree of physiological stress and delay of effort recuperation, various blood parameters were monitored at the moment of capture and 1, 24 and 48 hours later. Mean time required to capture an eagle was 4 min 46 sec ($n = 10$, $SD = 2'25''$).

Serum concentrations of creatinine phosphokinase (CPK), which is an indicator of muscle damage and metabolic flux after prolonged and/or strenuous muscular efforts, changed, reaching peak concentrations 24 hours after capture ($\bar{x} = 1915$ IU/l, $SD = 1364$ IU/l, $n = 10$).

Only a slight increase in PCV and total protein was observed, indicating moderate extracellular dehydration at the moment of capture. Values of these parameters returned to normal 1 hour later. Hyperkalemia at the moment of capture could be caused by a redistribution of potassium from the intracellular to the extracellular fluid (acidosis), linked to dehydration or to a slight hemolysis. Kaliemia was back to normal 1 hour after capture. Natremia and chloremia did not change.

The flight-induced increase in blood uric acid 16.2 mg/dl ($n = 10$, $SD = 6.5$ mg/dl) could be attributed to an increase in purine catabolism. A higher uric acid level should not only enhance water conservation, but may also reduce flight-induced hyperthermia as well as acting as an antioxidant defense against oxidative tissue injury. Uric acid levels returned to normal 24 hours after capture. Basic physiological parameters showed polypnea, tachycardia and hyperthermia as a result of capture. Rectal temperature, respiratory and heart rates had returned to normal physiological values 2 hours after capture.

Blood gas analyses revealed a decrease in arterial blood pH to 7.1 ($n = 7$, $SD = 0.1$), in pCO_2 to 11.6 mmHg ($n = 7$, $SD = 3.1$ mmHg), in HCO_3 to 5.7 mmol/l ($n = 7$, $SD = 2.3$ mmol/l) and a deficit of base excess to -18.9 mmol/l ($n = 7$, $SD = 3.6$ mmol/l) at the time of capture. These parameters are diagnostic of a metabolic acidosis. Blood gas values were back to normal 24 hours after capture.

These data indicate that despite using a physiologically stressful capture technique, effort recuperation proved to be efficient within 24 hours.

