The effects of density, position in truck and stage of journey on deer during transport

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Remote heart rate and blood sampling devices were attached to transported red deer stags to assess whether stocking density, position in the crate and time in transit influenced physiological correlates of welfare. Stocking density had a highly significant influence on heart rate and plasma lactate levels. Heart rates of deer transported at a high density ($0.38m^2$ per 84kg animal) were 10-13% higher than those of deer transported at medium ($0.62m^2$) or low densities ($0.85m^2$). Lactate levels of animals transported at high or medium densities were 30-40% higher than those of deer transported at a low density. Magnesium levels may be sensitive to stocking density as well, but the effect requires further study. An animal's position within the crate also influenced heart rate and lactate levels. Heart rates of deer transported in the back or middle pens were 7-8% higher than those of deer tranposrted at the front, while lactate levels were 30-40% higher. If the elevated heart rates and lactate concentrations we recorded were indicative of physiological or psychological challenges, it may be best to transport deer at densities well below the currently recommended limit ($0.40m^2$/100kg animal) and to minimize the distance between the back of the crate and back axle of the truck. Although haematocrit, sodium and cortisol levels were not sensitive to variation in stocking density or the animal's position with the crate, cortisol and sodium levels increased significantly with time in transit; lactate decreased significantly during the journey. A two fold increase in cortisol during the 2h trip suggests that the length of journeys should be minimized to avoid welfare problems.