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www.ufaw.org.uk

Animal Welfare 2016, 25: 171-177  
ISSN 0962-7286  
doi: 10.7120/09627286.25.2.171

## Lambs show changes in ear posture when experiencing pain

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### Abstract

Ear posture, or the frequency of postural changes, may reflect various emotional states of animals. In adult sheep (*Ovis aries*), the 'forward' ear posture has been associated with negative experiences whereas the 'plane' posture has been associated with positive ones. This study aimed to see whether ear postures related to the experience of pain in lambs. The ear behaviour of four to eight week-old lambs ( $n = 44$ ) was measured before and after tail-docking using a rubber ring. Each lamb was docked and its behaviour recorded while in the company of an observer lamb of similar age; each acted once as focal (docked) lamb and once as observer within the same pair. Lambs were docked in one of two rounds, so that half were docked in their first exposure to the test environment and half in their second exposure. Tail-docking was associated with an increase in the proportion of time spent with ears backward and decreases in the proportion of time spent with ears plane and forward (mean  $[\pm \text{SEM}]$ : Backward: pre 0.12  $[\pm 0.04]$ , post 0.56  $[\pm 0.04]$ ; Plane: pre 0.55  $[\pm 0.05]$ , post 0.19  $[\pm 0.05]$ ; Forward: pre 0.27  $[\pm 0.04]$ , post 0.18  $[\pm 0.04]$ ). There was also a significant increase in the number of changes between ear postures after docking (pre 5.63  $[\pm 0.66]$ , post 9.11  $[\pm 0.66]$ ). Over both periods, female lambs held their ears asymmetrically for longer than males (mean of ranks  $[\pm \text{SEM}]$  [raw proportion of time]: Females 52.14  $[\pm 3.44]$  [0.09  $(\pm 0.01)$ ], males 37.54  $[\pm 3.40]$  [0.05  $(\pm 0.01)$ ]). This is the first study to demonstrate changes in the ear posture of lambs associated with the negative experience of pain. Ear posture is a non-invasive indicator of physical pain in lambs and may be useful for evaluating potential welfare compromise.

**Keywords:** animal welfare, ear posture, emotion, husbandry, lamb, pain