

## Influences of enrichment on feedlot cattle behaviour and productivity

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Feedlots provide barren environments that cattle are often confined to for long periods (Pelley *et al.*, 1995; Wilson *et al.*, 2002). As societal awareness of animal welfare increases, intensive industries are required to increase transparency and strive to provide a better quality of life for animals (Scherer *et al.*, 2018). Finding an enrichment that is low cost, easily implemented and that has a positive impact on behaviour and productivity is not simple. The provision of brushes, straw and various scent enrichments have been explored (Ishiwata *et al.*, 2006; Zobel *et al.*, 2017; Scherer *et al.*, 2018), with brushes found to facilitate important self-grooming behaviour that results in better coat condition. The rate of usage in dairy cattle has been found to be an indicator of stress and illness and can increase milk yields (Mandel *et al.*, 2016, 2017). The implementation of an exercise regime for cattle does not require the provision of expensive structures and may be a way to acclimatise cattle to human handling and increase productivity.

The quality of previous interactions will determine whether an animal views a human as a social partner, neutral, or as frightening (Cooke, 2014). A positive human-animal relationship can successfully acclimatise cattle to handling (Mandel *et al.*, 2017), resulting in calmer temperaments, reduced stress and injuries and increases in feed intake, productivity and meat quality (Probst *et al.*, 2013; Gerlach, 2014). Therefore, the application of low-stress stock handling techniques to encourage exercise of feedlot cattle was investigated. *Bos taurus* cattle on a 120-day program in a feedlot in Western Australia were studied between day 40 and 80. Cattle (n=287) were split across three pens, with two pens under different exercise regimes (pen 1 = exercised in pen, pen 2 = released into laneway) and the third, a control. Cattle under treatments were exercised 2-3 times a week for approximately 20 minutes. During weighing on day 40 and 80, crush temperament scores and crush exit speeds were collected for approximately 30% of each pen. On days 41, 60 and 79, a novel person test, where an unfamiliar person walked calmly diagonally through the pen and an avoidance test were conducted on the cattle while in their pen. Exit speeds, crush scores and avoidance distances were not found to significantly differ between the treatment and control groups. An ANCOVA, with starting weight set as a covariate, found weight gains to not significantly differ between pens ( $F_{2,282} = 1.193, p > 0.05$ ), with the exercise treatments observed to have smaller distributions of weight gain, meaning that more animals had consistently higher weight gains. While the control group had some animals that did have a larger overall weight gain, this pen had smaller start weights and also had two animals that lost weight during the study. Video footage is currently under analysis, with behavioural responses prior to, during and post exposure to a novel person yet to be determined. The novel person test was designed to be a new method to validate the human-animal relationship, determine how this changed over time and how animal responses were influenced by the exercise treatments. Cattle that have a calmer temperament were expected to return to maintenance behaviours, such as eating and resting, faster after exposure to the novel person and handling. This study provides the first analysis of exercise enrichment on cattle temperament and behaviour within Australia and has the capacity to not only enrich cattle wellbeing at feedlots, but to also increase productivity.

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