

## Monitoring and reducing canine stress in animal shelters

*Discusses potential practical methods shelters and pounds can use to monitor and alleviate stress in dogs in their care.*

**By Melissa Bridges**

Word count: 998 **NB recheck word count after changes**

### Introduction

Many dogs enter pounds and shelters each year, with the RSPCA alone receiving nearly 50,000 dogs in the 2012-2013 period (RSPCA, 2013), so management practices operating within such facilities can have profound effects on the welfare of thousands of canines. The NSW Animal Welfare Code of Practice No 5 (NSW Agriculture, 1996) provides standards to ensure that welfare is maintained in shelters, but scientific research is constantly emerging that could be used to further enhance the welfare of dogs in temporary care.

### Discussion

Shelters can be extremely stressful for dogs for many reasons, including a loss of familiar surroundings and attachment figures and the presence of foreign sounds and smells. As stress is an intrinsically aversive state, minimising stress is imperative for improving welfare. Cortisol concentrations, obtained by laboratory analysis of biological samples, are commonly used as a physiological indicator of stress (Hennessy, 2013). Previous studies have shown increased cortisol concentrations in shelter dogs (Hennessy, 2013).

Unfortunately, cortisol concentrations are not a measure that shelters could realistically use to monitor and rectify high degrees of stress in their residents. Recent research has attempted to link cortisol levels to other measurements that could be diagnostic of stress. In a population sample of shelter dogs (n=13), Jones *et al.* (2014) investigated the correlation between cortisol concentrations and activity levels, as measured by an accelerometer fastened to dogs' collars. Cortisol concentrations were shown to be higher than in typical companion dogs, suggesting that they had a higher level of stress (Jones *et al.*, 2014). Activity levels were shown to correlate with cortisol concentrations such that the maximal activity correlated with salivary cortisol only, while mean activity correlated with urinary cortisol only. The authors suggested maximum activity could be indicative of acute stress, whereas mean activity may represent more chronic stress. Further studies are required to evaluate these assumptions and verify the usefulness of accelerometers for detecting stress. Importantly, although some stressed dogs become hyperactive, other stressed dogs show the opposite reaction (Jones *et al.*, 2014). Consequently, a method of rating activity level as abnormally high or low could help identify particularly distressed dogs. While this research offers a potential method for shelters to identify stress, it will prove to be of value only if actions are subsequently taken to offset stress.

A recent study by Shiverdecker *et al.* (2013) highlights how human interaction can help alleviate stress in dogs recently admitted to shelters. Shortly after entering the shelter, each dog (n=79) was allocated into one of five conditions, each lasting for 30 minutes: passive human, in which a human was present in the testing room but did not interact with the dog; pet, in which the human massaged the dog while speaking in a soothing voice; active play, which included playing fetch and basic training; isolation, in which the dog was alone in the test room; or home cage, in which the dog was alone in a standard kennel. Blood samples were taken before and after the sessions to compare plasma cortisol concentrations. Only the conditions involving a human yielded a decrease in post-test plasma cortisol concentrations (Shiverdecker *et al.*, 2013). This effect was largest in the soothing and petting condition (Shiverdecker *et al.*, 2013). Thus, it appears that allowing dogs 30 minutes of human contact when they are admitted to shelters may benefit their welfare, particularly if that contact involves soothing and petting. As with the paper by Jones *et al.* (2014), these findings have the potential to be incorporated into the daily shelter regime. Although this study focused on 30-minute sessions, further studies could be directed at refining the sessions to explore whether lowered cortisol concentrations can be obtained more efficiently. While this study relied solely on cortisol concentrations as an indicator of stress, a combination of assays including additional physiological indicators that reflect stress could provide more accurate results.

Herron *et al.* (2014) also examined how human interaction can influence behaviour and adoption rates in shelters. One group of dogs (n=48) received twice-daily training, while the other group of the same size did not. Training sessions involved positive reinforcement of desirable behaviours such as "sit".

Behavioural frequencies from the onset of the study were compared to those after three days of conditioning. Some behaviours were readily learned in this time, including “sit” and not to jump up or bark, but other behaviours were not (Herron *et al.*, 2014). Interestingly, the control group showed an increase in jumping in the absence of training (Herron *et al.*, 2014), suggesting that they naturally developed the undesirable habit.

No difference in adoption rates was observed between the two groups over seven recorded days (Herron *et al.*, 2014), but no data were provided about the long-term success of these adoptions. As behavioural issues are a major reason that people relinquish dogs (Marston *et al.*, 2004), it is logical to suggest that the dogs receiving training were probably more likely to have successful long-term adoptions.

## Conclusions

Although the study could be extended with more training sessions and long-term adoption data, it does suggest that dogs in kennels are readily trained in as little as three days. This may improve welfare through increased adoptability, or the human exposure involved with training could reduce stress, as shown by Shiverdecker *et al.*, (2013). Additionally, if dogs are trained not to bark, it could remove a potential stressor for dogs in nearby kennels, thereby benefitting the welfare of many other dogs. Unlike the articles by Shiverdecker *et al.* (2013) and Jones *et al.* (2014), this study did not involve any welfare indicators, but rather presumed that the behavioural change would benefit welfare. Thus, linking the training outcomes with other parameters that indicate welfare status is warranted.

Currently there is considerable research into aspects of shelters and pounds that affect welfare. This research has the potential to be extremely valuable if shelters use the findings to modify their daily regimens. Assuming the empirical results translate well from controlled experimental conditions into real scenarios, universal evidence-based guidelines could be developed, thus benefitting the welfare of countless dogs.

## References

Hennessy, M.B. 2013 Using hypothalamic-pituitary-adrenal measures for assessing and reducing the stress of dogs in shelters: A review. *Applied Animal Behaviour Science*, 149, 1-12.

Herron, M.E., Kirby-Madden, T., Lord, L.K. 2014 Effects of environmental enrichment on the behavior of shelter dogs. *Journal of the American Veterinary Medical Association*, 244, 6, 687-692.

Jones, S., Dowling-Guyer, S., Patronek, G.J., Marder, A.R., Serguson D’Arpino, S., McCobb, E. 2014 Use of accelerometers to measure stress levels in shelter dogs. *Journal of Applied Animal Science*, 17, 1, 18-28.

Marston, L.C., Bennett, P.C., Coleman, G.J. 2004 What happens to shelter dogs? An analysis of data for 1 year from Australian shelters. *Journal of Applied Animal Welfare Science*, 7, 1, 27-47.

NSW Agriculture 1996 *NSW animal welfare code of practice no. 5*. NSW Department of Primary Industries, viewed 19 Mar. 2014, <<http://www.dpi.nsw.gov.au/agriculture/livestock/animal-welfare/codes/aw-code-5#3--Animal-housing>>.

RSPCA 2013 *RSPCA Australia national statistics 2012-2013*. RSPCA Australia, viewed 19 Mar. 2014 <[http://www.rspca.org.au/sites/default/files/website/The-facts/Statistics/RSPCA\\_Australia\\_National\\_Statistics-2012-2013.pdf](http://www.rspca.org.au/sites/default/files/website/The-facts/Statistics/RSPCA_Australia_National_Statistics-2012-2013.pdf)>.

Shiverdecker, M.D., Schiml, P.A., Hennessy, M.B. 2013 Human interaction moderates plasma cortisol and behavioural responses of dogs to shelter housing. *Physiology & Behaviour*, 109, 75-79.