Captive Asian Elephant Welfare: Recent Research into Training and Handling Methods

This paper explores recent research into the welfare benefits possible for captive Asian Elephants with alternatives to traditional elephant training and handling methods.

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Introduction

Asian elephants have a long history of being trained to work. Traditional training methods across Asia generally involve punishment- and aversion-based training methods, alongside positive reinforcement (Fagen *et al.*, 2014). The severity of punishment and negative reinforcement varies with the individual trainer (McGreevy & Boakes, 2011) but, from a welfare perspective, the potential for misuse in training these animals is concerning. A recent survey of captive elephant stakeholders identified training methods as an important factor in the welfare of these elephants (Gurusamy *et al.*, 2014). This paper explores alternatives to traditional elephant training and handling methods, and welfare benefits these alternatives may provide.

Discussion

"Captive elephant handlers in Nepal still rely heavily on punishment- and aversion-based methods" (Fagen *et al.*, 2014). Negative reinforcement training relies on an aversive stimulus, such as pain or fear of pain being applied and taken away (McGreevy & Boakes, 2011, Fagen *et al.*, 2014). Elephants are very sensitive to tactile stimuli (McGreevy & Boakes, 2011), and so the aversive stimulus is pressure applied to the skin with an elephant hook or a whittled bamboo stick (Nepal) (Fagen *et al.*, 2014; McGreevy & Boakes, 2011). This pressure will elicit avoidance behaviours, such as turning right when the point is pressed to the back of the left ear (Fagen *et al.*, 2014). While negative reinforcement can be a useful tool in training desired behaviours, the potential for harmful, heavy-handed use exists (McGreevy & Boakes, 2011). If used incorrectly, or without accompanying positive reinforcement, this could be detrimental for the elephant's physical and psychological welfare (Laule, 2003).

Gurusamy *et al.* (2014) recently surveyed a range of stakeholders to identify key welfare issues for elephants. The survey results proposed that the type of training used was an important factor for elephant welfare (Gurusamy *et al.*, 2014). "Positive reinforcement training only" for shorter periods of time was considered most desirable, while "negative reinforcement training" and "punishment" were considered very undesirable for elephant welfare (Gurusamy *et al.*, 2014). Laule (2003) describes the many benefits to animal welfare of positive reinforcement training, especially for training to endure painful or uncomfortable veterinary procedures.

A recent study by Fagen *et al.* (2014) is the first to test the effectiveness of secondary positive reinforcement (SPR) training in elephants. Before this study, positive reinforcement training with elephants had been described but the efficacy had not been scientifically tested (Desmond & Laule, 1991; Laule & Whittaker, 2001).

In this study, elephants were trained to voluntarily participate in a trunk wash for tuberculosis testing using a secondary positive reinforcer (Fagen *et al.*, 2014). The elephants were classically conditioned to associate a whistle (the secondary reinforcer) with a food reward (the primary reinforcer). The secondary reinforcer was then used to mark the desired behaviour by the elephants. Capture, lure and shaping techniques were employed to train the required tasks, which were then strung together via behavioural chaining (Fagen *et al.*, 2014). The elephants' performance of the trunk wash improved from a mean success rate of 39% at the start of training to 89% by completion (Fagen *et al.*, 2014).

Although this study shows high levels of success in training the trunk wash, the value of this information is limited by the lack of a control group. A control group of elephants trained in the traditional method to perform the same task could fully reveal the advantages of SPR training. Future research could also compare the welfare impacts of traditional training vs SPR training, by testing the impact of different training methods on stress indicators for the elephants. Also future study could consider the degree to which each method facilitates veterinary intervention, as improved healthcare will result in improved welfare outcomes.

Captive elephant management in Asia generally occurs in free-contact systems, where handlers have unlimited contact with elephants (Proctor & Brown, 2015; Desmond & Laule, 1991). However, in western

zoos, a protected-contact method is increasingly being employed, where a barrier is maintained between handlers and elephants (Laule & Whittaker, 2001). Recent research by Proctor and Brown (2015) indicates that the effect of this method of handling on the elephants' welfare is limited. The study compared serum cortisol concentrations in blood samples collected from elephants in either free-contact or protected-contact management systems over two years (Proctor & Brown, 2015). The study found there was no significant difference in stress levels between elephants with protected-contact handling and those in free contact with keepers (Proctor & Brown, 2015).

Furthermore the survey by Gurusamy *et al.* (2014) found that the stakeholders felt the choice between protected contact and free contact should be ranked quite low as a priority for elephant welfare, as the third least important factor out of sixteen.

In light of these two papers, it seems the main reason for choosing protected contact is for the safety of keepers, rather than the welfare of elephants. It should be considered, however, that although free-contact handling does not affect elephant stress level, it may still result in poorer welfare. This is because the argument for the use of fear and punishment when training elephants is often justified by the potential for harm to handlers caused by an uncontrollable elephant (McGreevy & Boakes, 2011), and this argument is negated when using protected contact (Laule & Whittaker, 2001). However, the Fagen *et al.* (2014) SPR study was performed in a free-contact setting, showing that positive reinforcement training can also be successful in a free-contact system.

Conclusion

While recent research indicates the choice between free and protected contact does not affect elephant stress levels directly, protected contact may facilitate positive reinforcement training without risk to human safety (Proctor & Brown, 2015). The Gurusamy *et al.* (2014) survey highlights the preference for positive reinforcement training when considering elephant welfare. The proven efficacy of SPR training is a promising step toward a new direction in elephant training (Fagen *et al.*, 2014).

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