

## Trancing Rabbits : relaxed hypnosis or a state of fear?

Tonic immobility (TI) is a transitory and reversible state of profound motor inhibition that can be induced in susceptible species (Klemm 1976). Episode duration can be from several seconds to several hours, even within a single species (Gallup, 1975) the most susceptible species are those which are highly preyed upon. Described by Darwin as the death feint (Darwin 1839), it is believed that TI is a fear motivated terminal defense mechanism employed by prey animals, after other defense strategies have failed, and which serves to limit injury and provide the possibility of escape (Sargeant and Eberhardt 1975; Thompson et al 1981). The adaptive advantage lies in the motionless behavior associated with TI. This can deceive the predator into believing the prey item is already dead. In that case, the predator no longer needs to continue attacking it. The predator may then relax or change its grip, giving the prey item a last chance to escape.

In rabbits (*Oryctolagus cuniculus*), TI is widely used in veterinary practice and among pet owners as a simple and effective form of restraint/immobilization to carry out minor procedures such as nail clipping, with detailed instructions easily available (Bivin 1994; Chicago House rabbit Society 2004). Misnomers referring to TI as 'animal hypnosis' or 'trancing' have connotations that suggest the animals is happy, relaxed and insensitive to painful procedures; even to it having been suggested for use with more invasive procedures such as castration (Okerman 1994) Pet owners also use it believing it to be a show of affection or medium to increase bonding between themselves and their rabbits (McBride 1998)

Previous research has found that physiological responses in rabbits to TI are similar to those seen following a stressful event (Carli 1974, 1979; Klemm 1971). Work by Farabollini et al (1981, 1990) suggest that repeated TI induction initially results in sensitization with longer TI durations followed by partial habituation with shorter TI durations, but more stable, but still elevated corticosterone levels. To attain such partial habituation requires many repetitions and this is explicable if the behavior is a biologically adaptive anti-predator response.

Unfortunately, behavioral responses have not been examined so closely. By looking at both physiological and behavioral responses to TI in unison, this study aimed to determine whether inducing TI in rabbits produced a stress state and to identify the motivation underlying the physiological responses.

Physiological measures included respiration, heart rate, blood pressure and plasma corticosterone levels which were recorded immediately prior to TI induction, upon TI termination and 15 minutes following TI termination. Behavioral measures included latency and duration of TI episodes as well as movement and frequencies of behaviors recorded during ten minute pre- and post-TI observation periods.

Six New Zealand White rabbits were used, 2 entire females and 4 entire males. They were divided into two groups of one male and two females. Each rabbit acted as its own control in two TI trials, one trial to record behavioral measures and one for physiological measures.

A single typical response pattern was not evident across the group, for example some animals were more resistant to induction than others. These may reflect individual trait differences and differences in previous experience. For example, the two females had been in the facility for several months, compared to just two weeks for the males, and had had recent experience of blood being taken. The findings showed significant elevations in respiration ( $p < 0.046$ ), heart rate ( $p < 0.046$ ) and plasma corticosterone ( $p < 0.046$ ) were observed following TI. Blood pressure measures showed considerable variation and no consistent pattern was observed. In addition, species typical fearful behaviors, such as flattened ears and widened eyes, increased muscle tension and overt struggling, were observed during induction, while frequencies of grooming and hiding behaviors increased, and exploration decreased following TI.

The conclusion was drawn that both the physiological and behavioral responses of rabbits to TI are indicative of a fear motivated stress state (Day, 2004). This confirms the previous assertion that the promotion of TI as a means to increase a bond between owners and their pets, because the rabbits enjoy it, is misplaced (McBride, 1998). It

may be appropriate for veterinary surgeons, and owners to continue to use this method for minor procedures, such as nail clipping as it holds less risk than anesthesia. However, the data suggests that rabbits should only be put into TI when necessary and owners and others educated appropriately.

**Authors:**

McBride, A1; Day, S.2, McAdie, T.3, Meredith, A.4, Barley. J.5, Hickman, J.6 and Lawes, L7

McBride, Anne., Applied Animal Behavior Unit, School of Psychology, University of Southampton, Highfield, Southampton SO17 1BJ, UK. Tel +44 2380 597483; Fax = +44 2380 597306; amcb@soton.ac.uk

Day, Simone, Applied Animal Behavior Unit, School of Psychology, University of Southampton, Highfield, Southampton SO17 1BJ, UK. Simone.day@virgin.net

McAdie, Tina., School of Psychology, University of Huddersfield, Queensgate, Huddersfield HD1 3DH, UK t.mcadie@hud.ac.uk

Meredith, Anna; Royal (Dick) School of Veterinary Studies, Univeristy of Edinburgh, Scotland, UK anna.meredith@ed.ac.uk

Barley, Jasmine., School of Biological Sciences, University of Southampton, Bassett Crescent East, Southampton SO16 7PX, UK Tel +44 2380 796818

Hickman, Janice Applied Animal Behavior Unit, School of Psychology, University of Southampton, Highfield, Southampton SO17 1BJ, UK

Lawes, Lesley School of Biological Sciences, University of Southampton, Bassett Crescent East, Southampton SO16 7PX, UK +44 2380 595000