

**A COMPARISON OF  
EAR-TAGGING AND EAR-WHITING  
AS METHODS OF IDENTIFICATION IN DOGS**

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**> 70,000 STRAY DOGS**  
4 MILLION HUMAN POPULATION  
1 DOG FOR EACH 6 PEOPLE

**Italian law** (281/1991) no kill policy (unless they are incurable or proven to be dangerous)

- Stray dogs have to be captured, **microchipped**, neutered and taken to dog shelters.



**Puglia law** (12/1995) permits trap, spay/neuter, identify and release (alternative to shelter).



# MICROCHIPPING

Microchip = Code

Password: Data base

**NOTICE**

**AUTHORIZED PERSONNEL ONLY**

**Microchip identification:**

- Does not indicate where the dog is from
- Does not indicate if dog is owned or stray
- Does not indicate if the dog has been spayed/ neutered

**Many neutered dogs are recaptured, some undergo new surgery!**

# STUDY BEST PRACTICE FOR HUMANE VISUAL IDENTIFICATION OF TREATED STRAY DOGS

## GOALS

To scientifically detect the best method (tag vs whiting/freeze branding) to identify dogs, determining which method is:

- More humane
- Least stressful/painful for the animals
- Easy to be performed on large scale
- Feasible with non-surgical sterilization techniques

- Dogs were just sedated
- No surgery was performed before the identification
- No antibiotics or anti-inflammatory drugs

**We approached these techniques without previous experience!**

# STRESS (PAIN) INDICATORS

(HOLTON ET AL., 2001; MATTHEWS, 2000; BEERDA ET AL., 1997)

Responses

**Behavioral**

- TEMPERAMENT (submissive, aggressive..)
- VOCALIZATION (crying, howling..)
- POSTURE (position of ears, tail, hunched or prying position..)
- LOCOMOTION

**Physiological**

- Heart - Respiratory rate increase
- Pupil enlargement
- Blood/Salivary parameters (WBC, cortisol, CRP.)

} MPS

} SI

ANXIETY INCREASES PAIN PERCEPTION (Bufalari et al., 2007)

# MELBOURNE PAIN SCALE (MPS)

Code	Description	Score
1	Physiological data within reference range	1
2	Distal pulse	1
3	Percentage increase in heart rate relative to baseline	1
4	>20%	1
5	>30%	1
6	>40%	1
7	>50%	1
8	>60%	1
9	>70%	1
10	>80%	1
11	Percent increase to respiratory rate relative to baseline	1
12	>20%	1
13	>30%	1
14	>40%	1
15	>50%	1
16	>60%	1
17	>70%	1
18	>80%	1
19	Percent increase exceeds reference range	2
20	No change from preoperative behavior	2
21	Change from preoperative behavior	2
22	Change from preoperative behavior	2
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198	Change from preoperative behavior	2
199	Change from preoperative behavior	2
200	Change from preoperative behavior	2

- This scale incorporates physiologic data and behavioral responses.

- Six categories divided in levels (scores of 0, 1, 2, or 3)

- Score range 0-27.

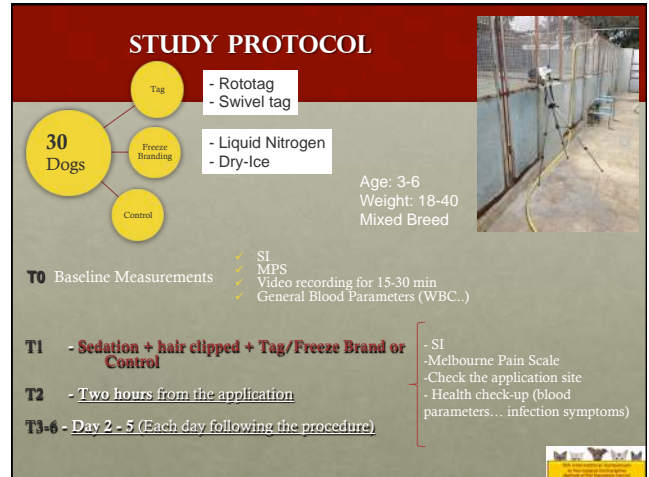
9 → Mild Stress

18 → Moderate

27 → Severe

Example: 4...minimal pain

15..analgesic treatment needed (Bufalari et al., 2007)



## RESULTS

- Maximum stress at handling (before any procedures!): **MPS 9**

Noise, immobilization, etc. have been reported to elicit responses in behavioural, cardiovascular, endocrine, renal, gastro-intestinal, and haematological parameters (Beerda et al., 2009)

## RESULTS

### EAR TAG


**PROS**

- Easily performed - No training needed (instructions)
- Quick application
- Inexpensive
- No risk of harm for operator
- Good visibility
- Can identify individuals or groups of animals using a code or a color

**NOTE:**


- Care should be taken when applying ear tags to avoid hitting the cartilage ridges and ear vein (use a flashlight to visualize them and mark with pen)

RESULTS

 **PROS**


- No infections
- No fly strike.

48 h post application



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RESULTS

 **PROS**

- STRESS - PAIN
- MPS 4-6 = Minimal pain (quick/acute pain?)

VIDEO – TAG

RESULTS

 **CONS**

## EAR TAG

- Not Permanent
- Skin lesion occurred for tag rubbing
- More exudate with long hair



↓

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RESULTS

 **CONS**

## EAR TAG

Side effects following the application


- Dogs scratched themselves using back legs, scratching against the wall, shaking head, >ROTOTAG (Other dogs did not bother the tags!)




VIDEO "shake" 

## FREEZE BRANDING

THE APPLICATION OF A MARK  
USING AN EXTREMELY COLD BRANDING IRON



- Copper branding iron must be placed on the skin for the **correct time** and at the **correct pressure**.
- Destroys the color follicles at the brand site that appears white (**dark-haired animals**).
- If the iron is held against the skin for a longer period of time no hair will grow at all (**light-haired animals**)
- Coolant:
  - ◀ LIQUID NITROGEN
  - ◀ MIXTURE OF DRY ICE + ALCOHOL



## FREEZE BRANDING

RESULTS



**PROS**

- Mark is **permanent**
- Highly visible on dark-haired animals.
- A standard, uniform white mark produced.
- Animals did not react to freeze branding (but the procedure does have the potential to cause pain)





VIDEO – "N" 





## FREEZE BRANDING

RESULTS






**CONS**

- Not useful to individually identify a large number of animals.
- **Time-consuming.** The iron can take around 10 minutes to cool to the correct temperature, and the branding procedure itself can take up to 10 minutes per animal.
- Freeze branding does not provide immediate identification – the mark will not be clearly visible for some weeks after branding (longer on light haired dogs).
- **Complexity.** Hard to handle the dog in lateral recumbency for so long (20-40 sec).
- **Operators require training** to master the technique. If the iron is in contact for too long, the animal will be scarred (ok for light hair dog!)
- Difficult to obtain a uniform mark because of ear shape





## Different application site..

**CONS FREEZE BRANDING** RESULTS

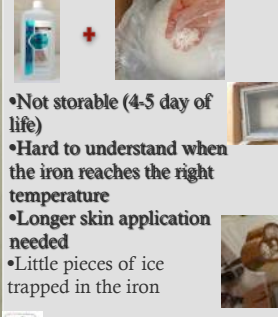
**Liquid nitrogen**



- Can be difficult to obtain and transport
- Cost effective
- Dissipates quickly (1 L for two dogs!)

- Quick cooling
- Quick application

**Dry-Ice + Isopropanol**



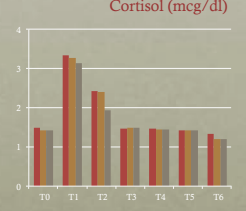
- Not storable (4-5 day of life)
- Hard to understand when the iron reaches the right temperature
- Longer skin application needed
- Little pieces of ice trapped in the iron

- Easy to handle/transport

**STRESS - PAIN** RESULTS

	MPS
Ear Tag	4-6
Freeze Branding	
- Nitrogen	3
- Dry Ice	4
Handling	9

**Cortisol (mcg/dl)**



- MPS 4-6 = Minimal pain (quick pain?)
- Cortisol ↑ FB the day of application (T1-2) in all the groups (control group included).

**CONCLUSIONS**

- Handling is very stressful for unowned dogs.
- Ear tag is less stressful than freeze branding – minor application/restraint time needed.
- Pain measurements were minimal for either technique.
- Freeze branding is permanent but not easily performed.
- In a dog population control campaign, TAG (swivel) seems preferable (although not permanent).
- Future study: How long does the swivel tag last on stray dogs?

Stray dogs...



**THANK YOU!**