

Transport and handling

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Background

- Animals are handled and transported for several reasons:
 - To provide better sources of food
 - To control diseases
 - To facilitate breeding
 - To control breeding
 - To obtain a product (milk, wool, meat)
 - ...

Why is it that handling may be an animal welfare concern?

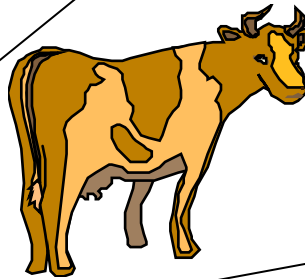
- Handling may be associated with fear, pain and stress
- Poor/untrained animal handlers are likely to cause the worst welfare outcomes.

Why is it that handling may be an animal welfare concern?

- The welfare outcomes associated with handling are influenced by prior experience.
- For some animals handling and transport may be a positive experience.

Assessment of fear

Open field and related tests



- 1) Approach latency
- 2) Behavioral responses
defecation, urination
- 3) Physiological responses

Behavior of the stockman

Performance

Time to come near stockman

Shorter the time to come near, larger the number of piglets reared per sow

Time spent near stockman

Longer the time spent near the stockman, larger the number of piglets reared per sow

Number of interactions

Larger number of interactions, the larger the number of piglets reared per sow

Seabrook, 1984

Behavior of the stockman & performance

Behavioral Observation	Results (Milk Yelding)	
	Higher	Lower
Mean entry time of cows to parlor	9.9 sec/cow	16.1 sec/cow
Field flight distance	0.5 m	2.5 m
Approaches to observer (herd)	10.2 x min	3.0 x min
Dunging in the parlor	3.0/hour	18.2/hour
Stockman touching the animals	2.1 x min	0.5 x min
Stockman talking to the animals	4.1 x min	0.6 x min

Hemsworth and Barnett (1987) (pigs & humans)

Parameters	Pleasant	Aversive
Time to interact	119 sec	157sec
Growth rate	709 g/day	669g/day
Glucocorticoids	2.1ng/ml	3.1ng/ml

Hemsworth and Barnett (1987) (pigs & humans)

• Parameters	Pleasant	Minimal	Aversive
• Time to interact	48 sec	96 sec	129 sec
• Pregnancy rate	88%	57%	33%
• Age of mating	161 d	176 d	193 d
• Glucocorticoids	1.7 ng/ml	1.8ng/m l	2.4 ng/ml

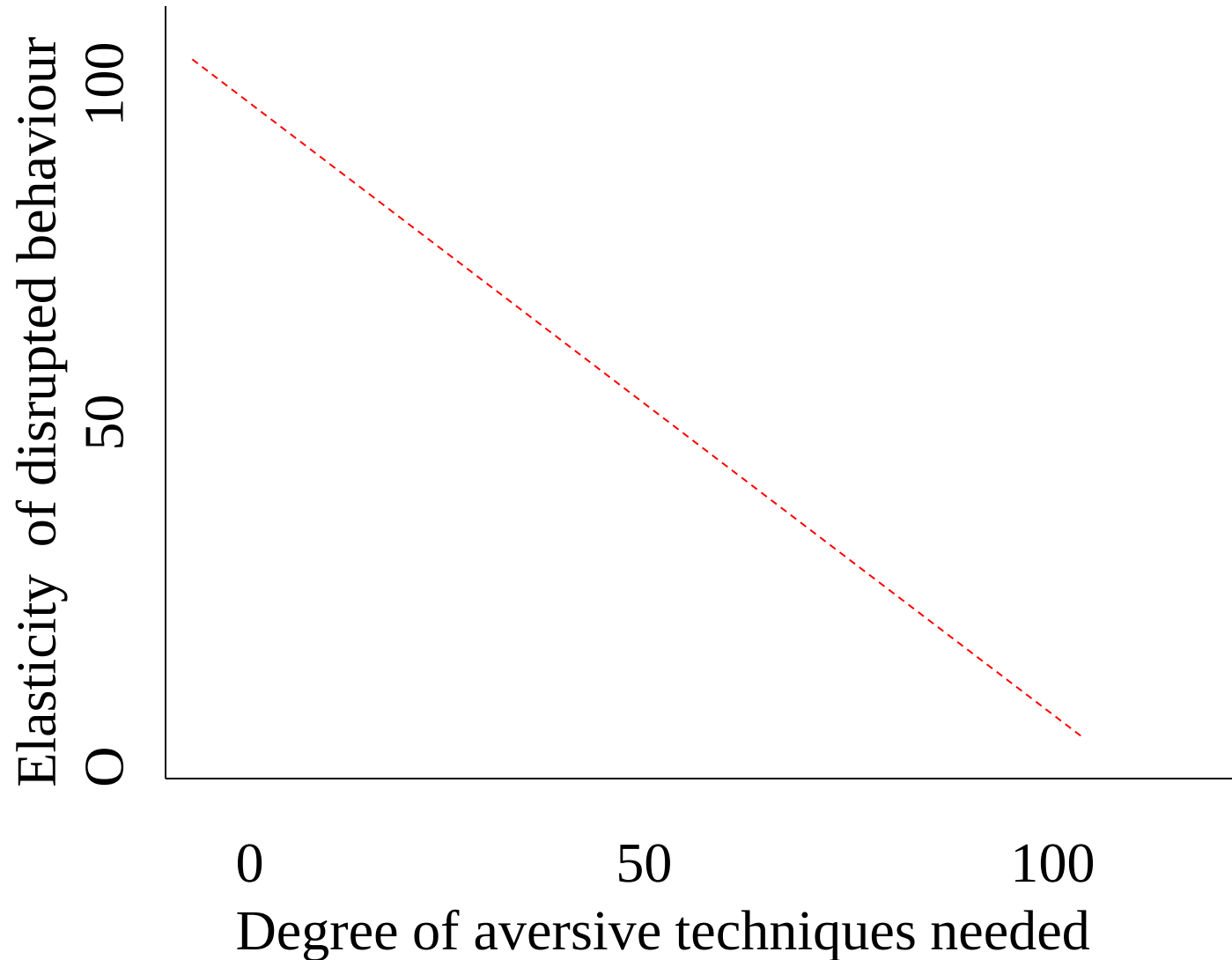
Rushen et al., 1999

- Cows handled in a negative way showed a larger amount of **residual milk*** than cows handled in a positive way (in the presence of the experimenter).
- Cues used for recognition were mainly visual (color of clothes)
 - *milk obtained after injecting the cows with oxytocin, post-milking

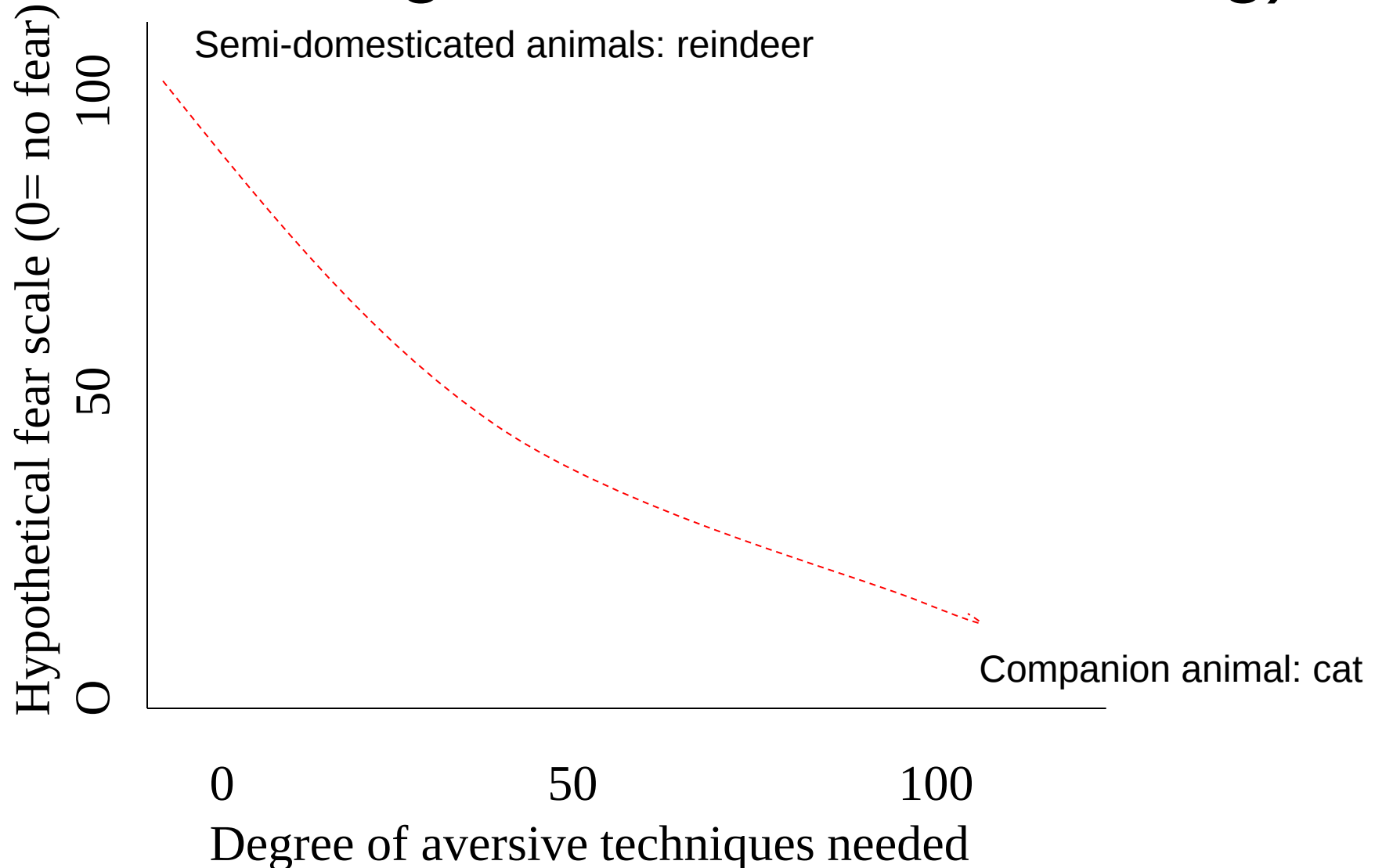
Ethology and animal handling

- Understanding animal behaviour is essential in order to carry out management practices effectively with minimal negative consequences to the animals.

Motivational state and handling



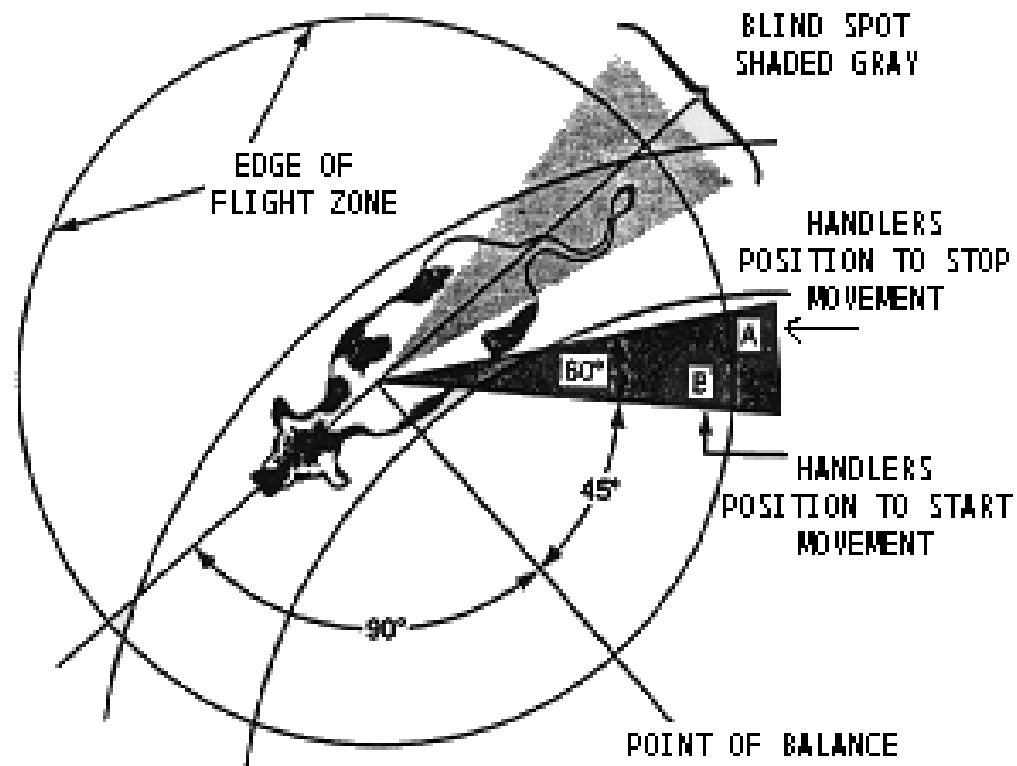
Fear responses and handling (not considering the effects of learning)



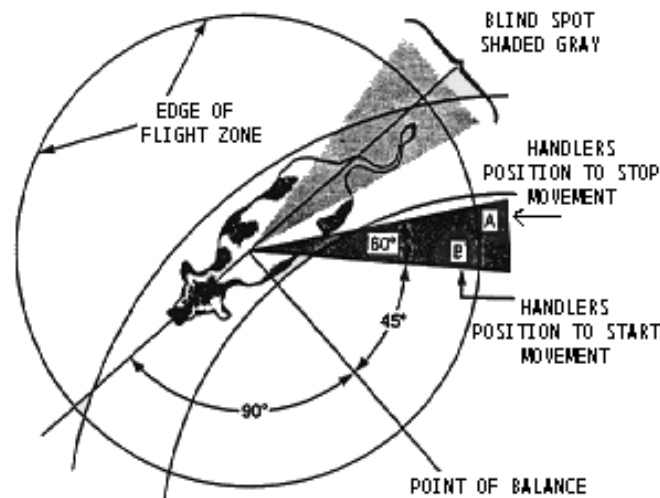
Likely “communication cues” used during handling

- Cues used to maintain social behaviour
- Cues used to avoid/escape predators
- Cues used to seek food

How animals respond to human approach (Grandin, T.)

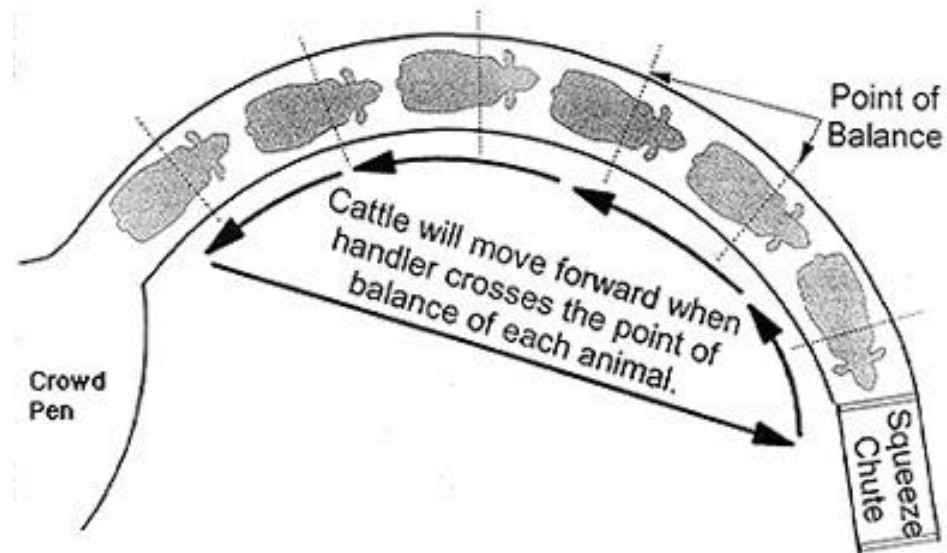
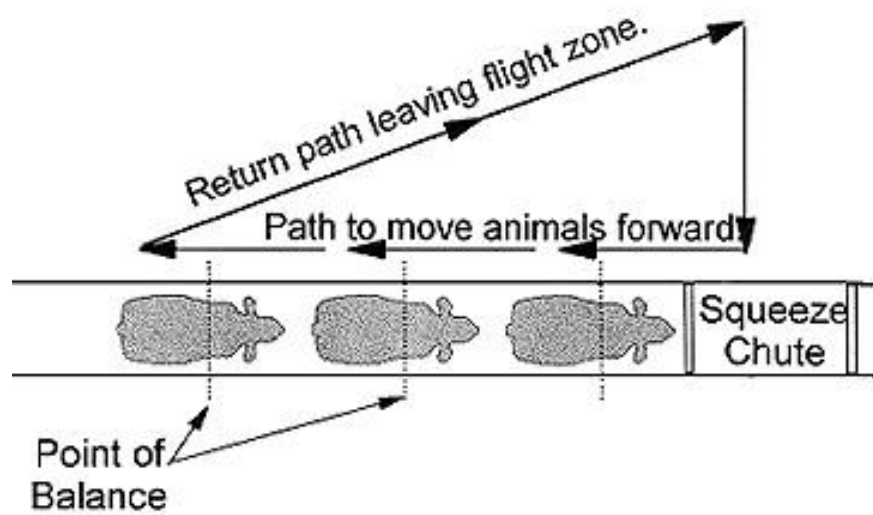


Handling cattle – Temple Grandin

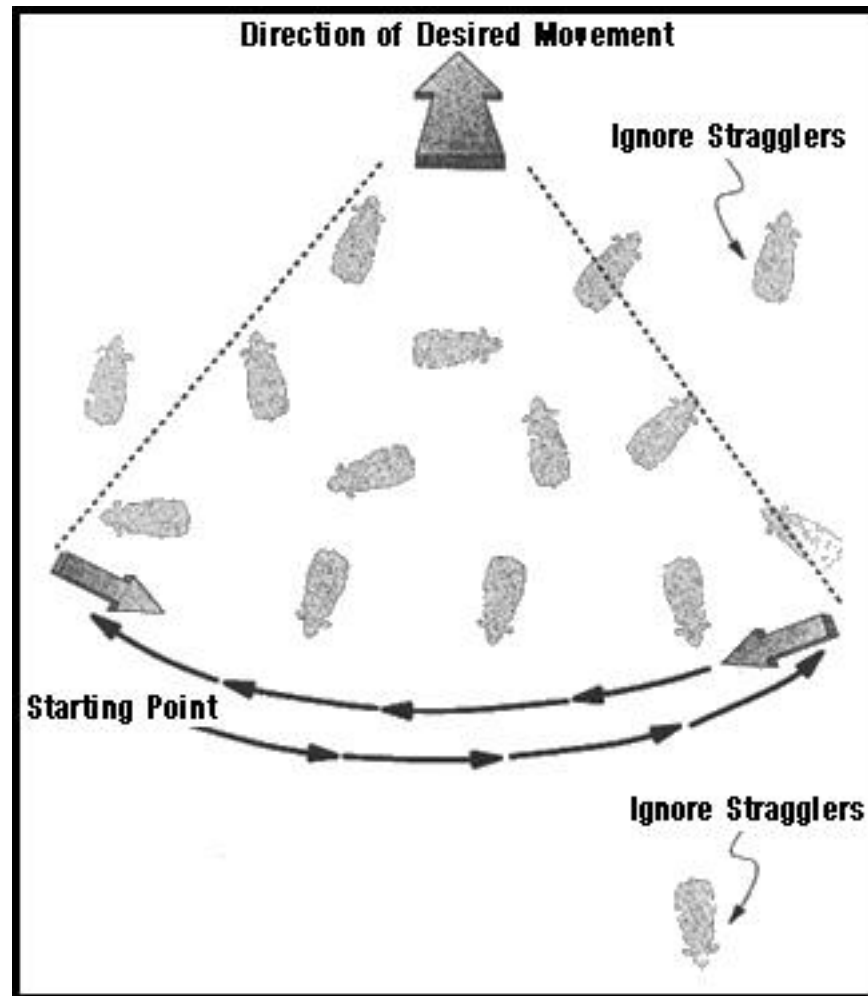


Handling cattle – Temple Grandin

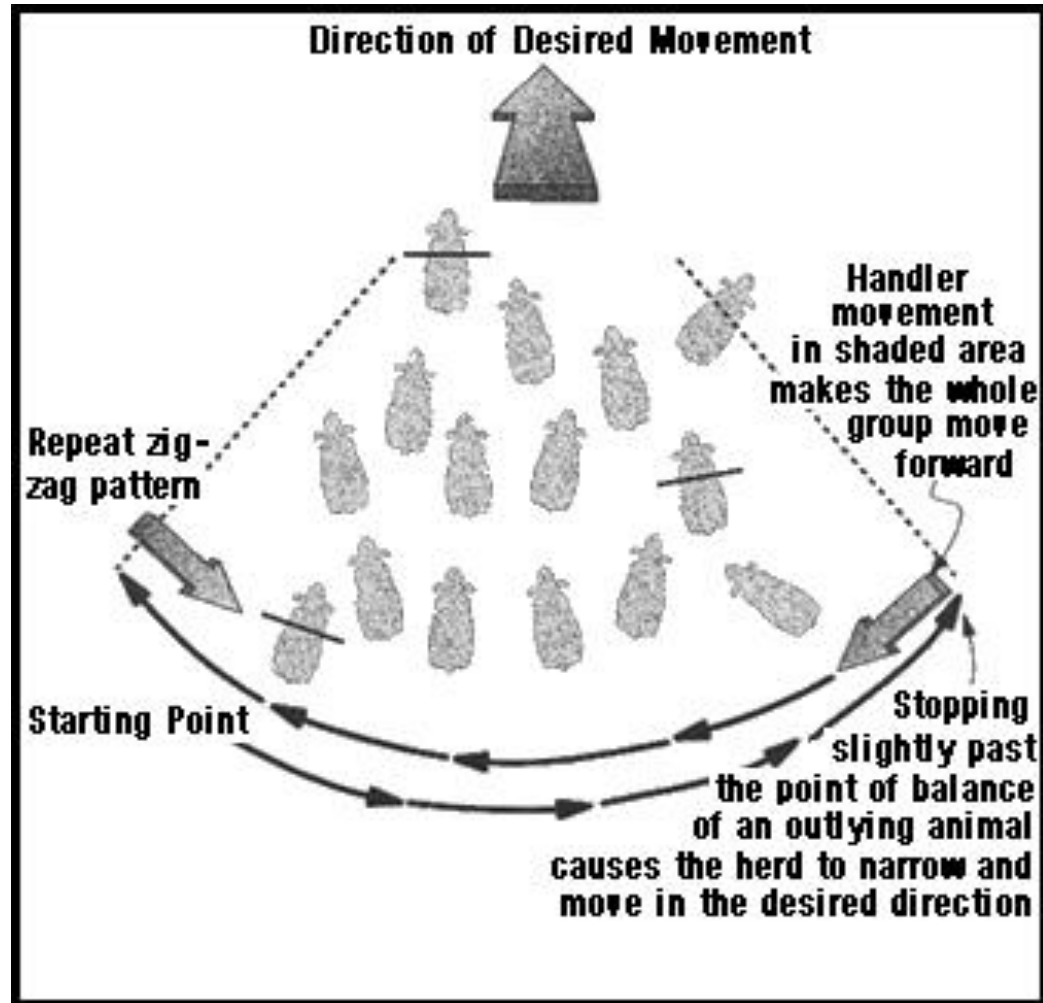




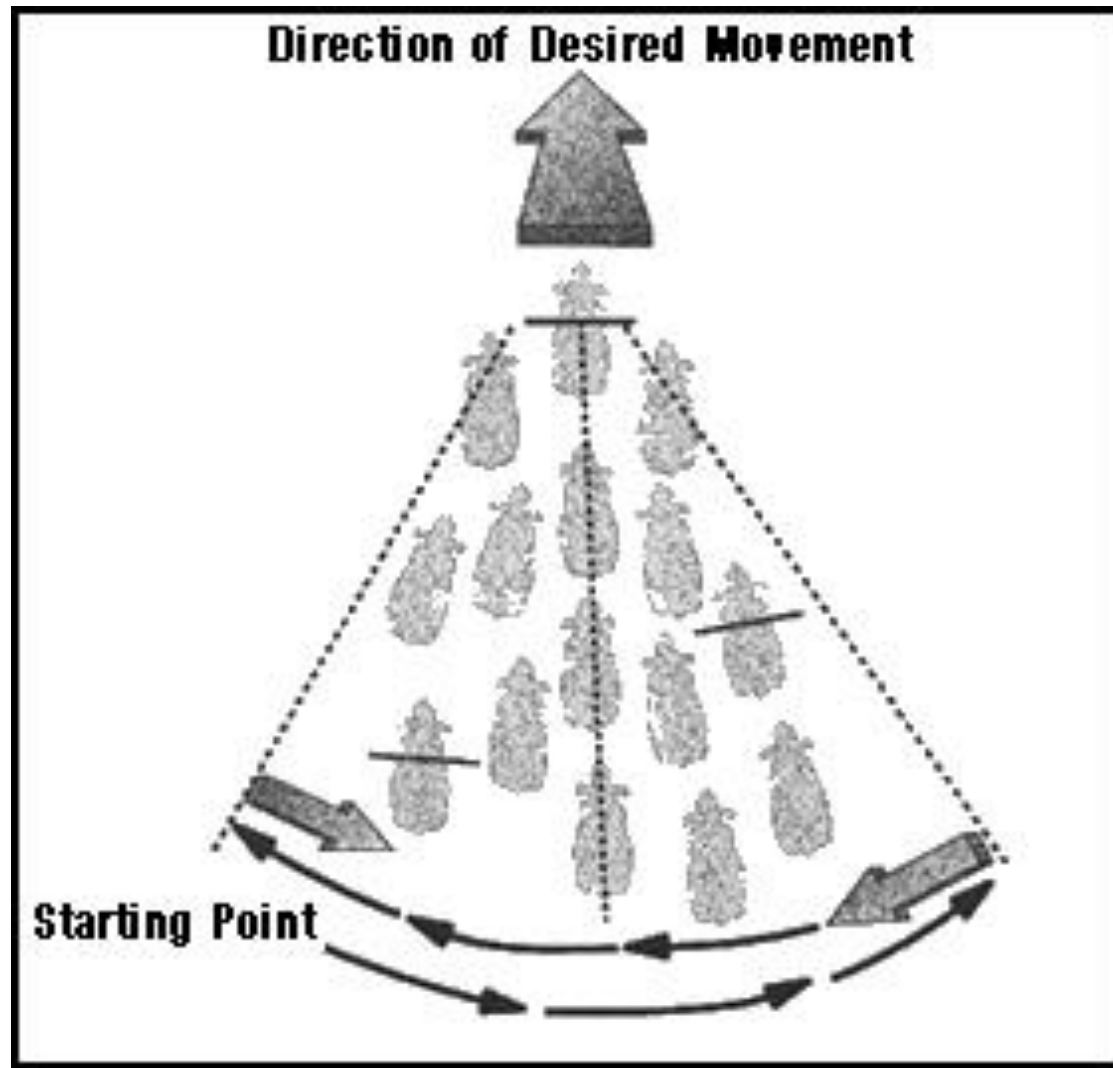
Bud Williams method (Grandin, T.)



Bud Williams method (Grandin, T.)



Bud Williams method (Grandin, T.)



Challenges to behaviour caused by handling practices

- Social behaviour may be disrupted.
- The space between animals may be reduced.
- Predator like behaviour, used by handlers, may cause fear and activated the stress-axis.
- Access to resources may be restricted (food, water, social companions...).

Challenges that may affect the welfare of animals during transportation

- Novelty: never experienced before
- It may occur in association with aversive handling
- Higher animal density affecting social spacing
- Poor quality of driving, can exacerbate negative responses

Challenges that may affect the welfare of animals during transportation

- Roads with excess of curves may increase the difficulty to maintain balance.
- High temperatures, paired with restrictions of the behavioural repertoire used for thermoregulation, can compromise animal welfare.
- Animals may experience “motion sickness” during transportation.

Some situations that may compromise effective handling (Grandin, T.)

- Check for common disruptors such as:
 - Sparkling reflections on puddles
 - Reflections on smooth metal
 - Metal clanging or banging
 - High pitched noise
 - Air hissing - should be silenced with mufflers or piped outside
 - Air drafts blowing towards approaching animals
 - Clothing hung on the fence

Some situations that may compromise effective handling (Grandin, T.)



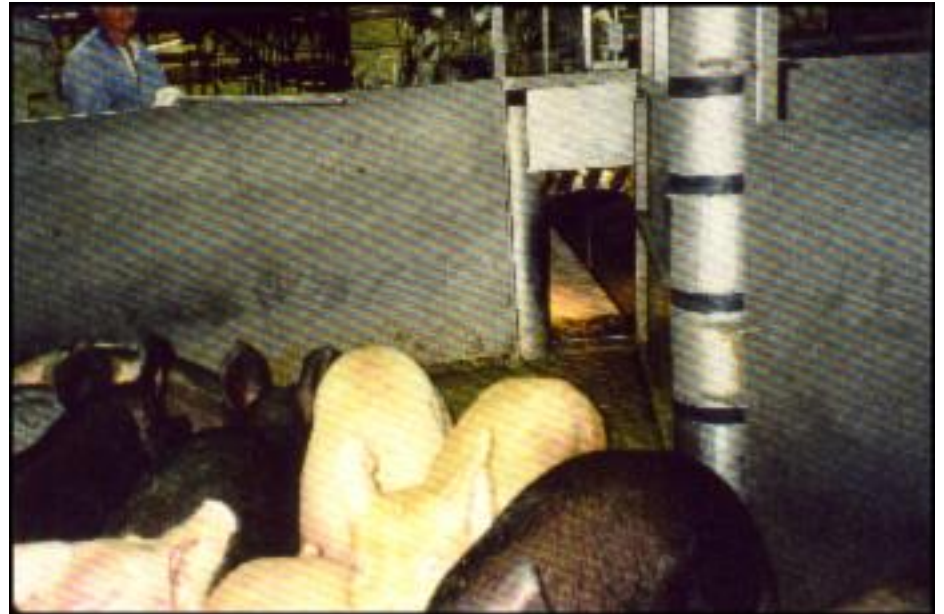
- Piece of plastic that is moving
- Fan blade movement
- Seeing people moving up ahead
- Small object on the floor - such as a coffee cup
- Hanging chain



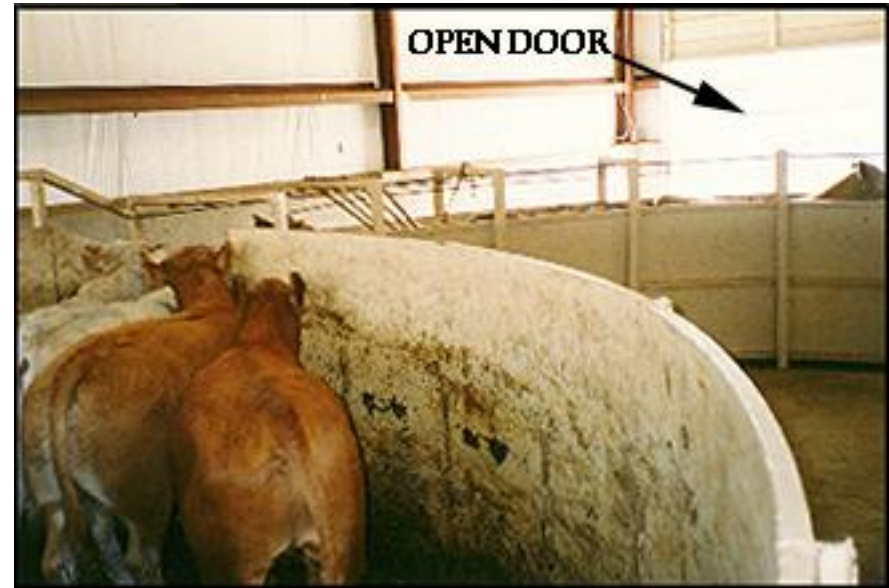
- Changes in flooring and texture
- Drain grate on the floor
- Sudden changes in the color of equipment.



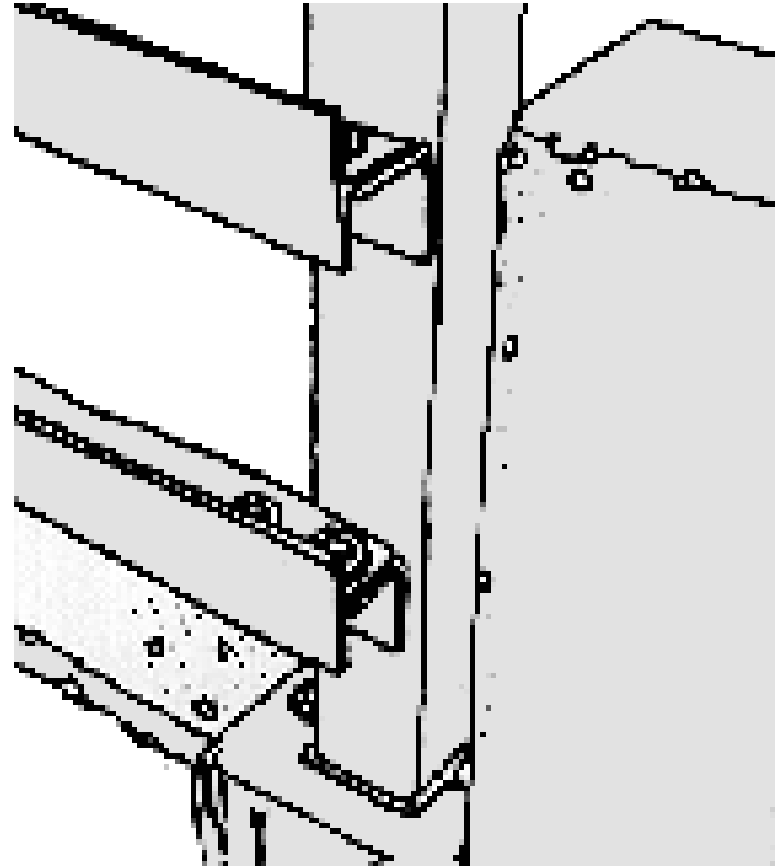
- Race entrance is too dark. Animals will move from a darker place to a brighter place.



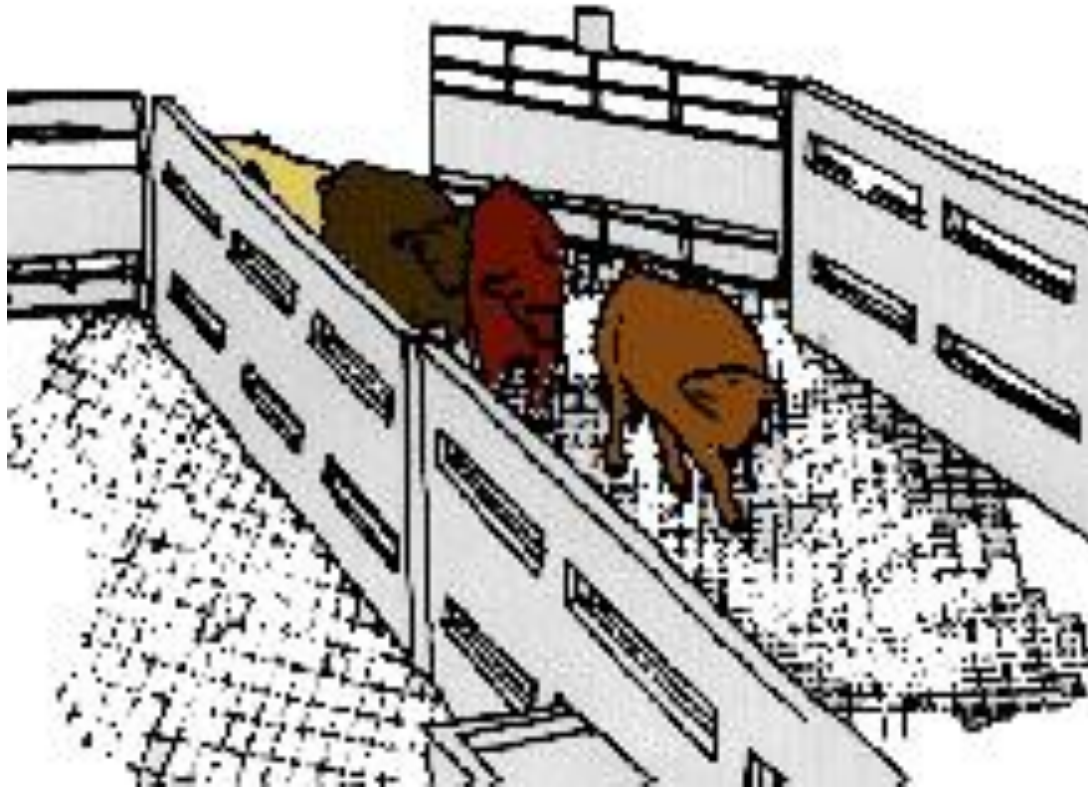
- Animals will move from a darker place to a brighter place, but they will not move toward blinding light.



Sharp edges may cause injuries



Slippery floors are a major cause of poor animal handling



Some simple solutions to solve visual disruptors proposed by Temple Grandin



Some simple solutions to move pigs

Sound hitting the board



Some simple solutions to move pigs



The use of electric prod: behavioural and physiological consequences

Brundige, Oleas and Zanella

Electric prod

- The use of electric prod can be reduced by improving handling techniques (Grandin, 1999)
- Electrical prod have a greater detrimental effect in stress susceptible swine (Veum et al., 1979)
- Elimination of electric prods seems to help in reducing petechial hemorrhages in pigs (Calkins et al., 1980; Grandin, 1988)

Brundige et al., 1998

- BEHAVIOR

TREATMENT

(frequency) Hurdle

Prod

- | | | |
|----------------|--------------------|------------------------|
| • Vocalization | 0.83 (± 1.5) | 10.33 (± 4.8)*** |
| • Jump | 0 | 5.55 (± 1.5)*** |
| • Climb | 0 | 1.42 (± 1.1)*** |
| • Fall | 0.04 (± 0.2) | 0.75 ($\pm .89$)** |

• *** $p < 0.0001$

** $p < 0.001$

Behavioral observation

“Post-loading”

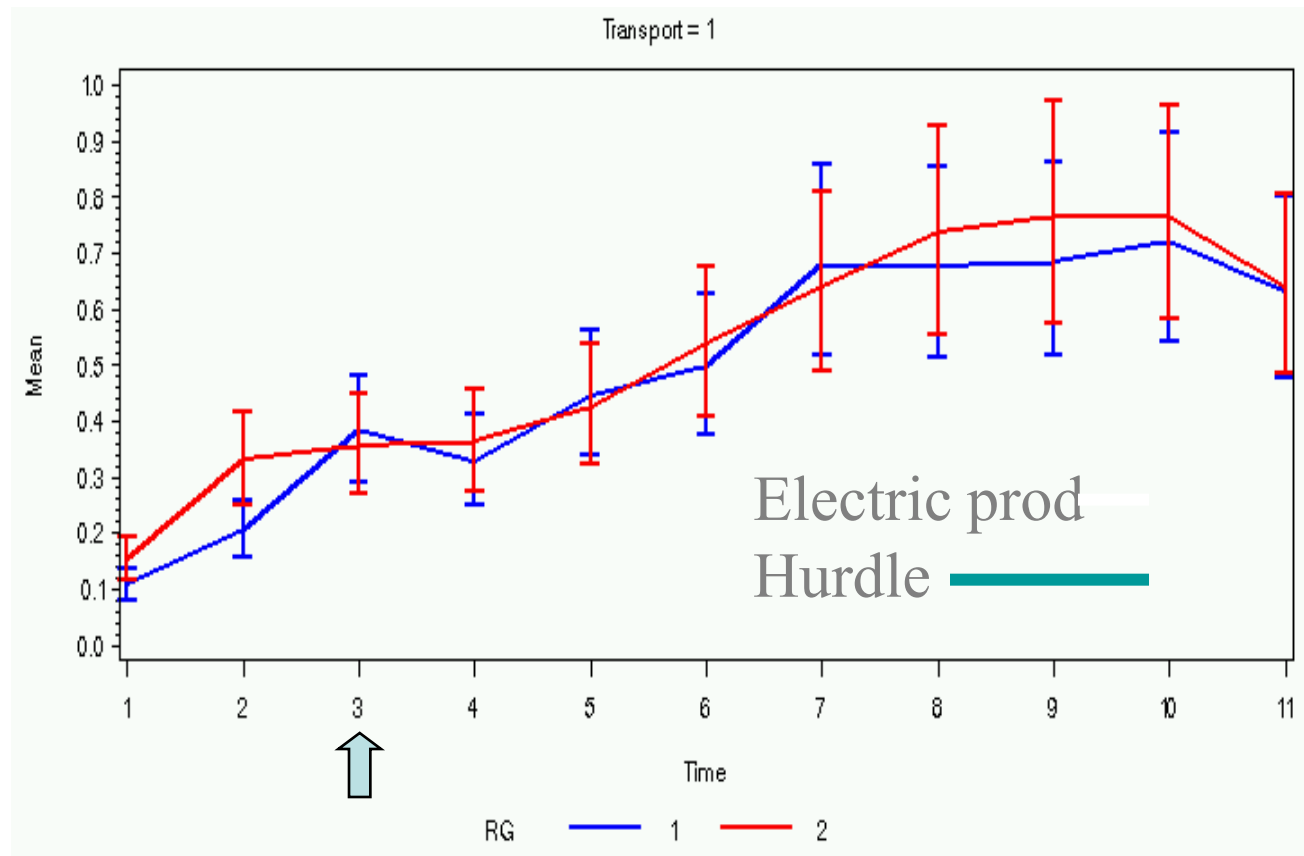
• BEHAVIOR	TREATMENT	
	Hurdle	Prod
(sec/15min)		
• Investigate	14.05 (± 23.7)	48.78 (± 45.5)**
• Idle	57.46 (± 91.8)	97.78 (± 45.5)
• Root	550.9 (± 51.0)	456.13 (± 84.4)***

• *** $p < 0.0001$

** $p < 0.001$

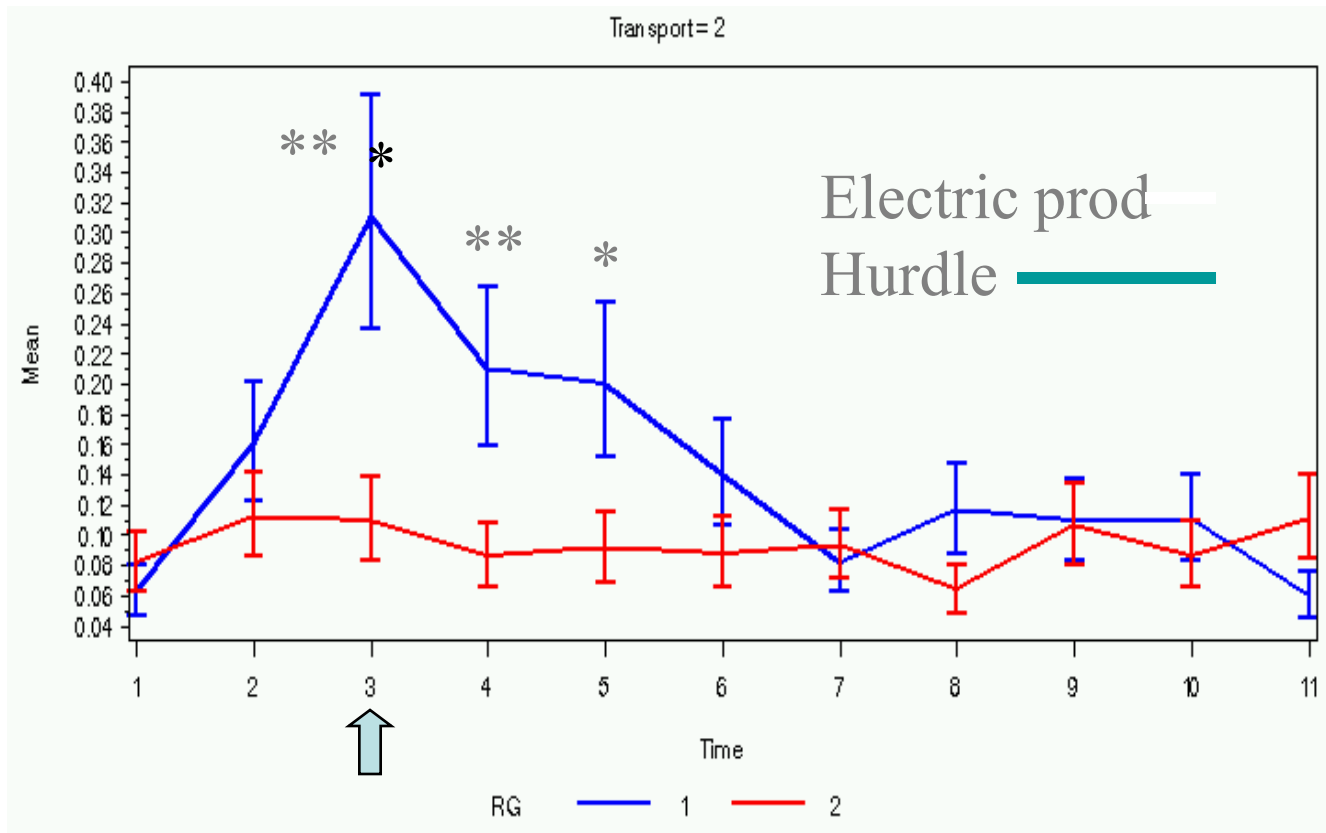
Pigs loaded using an electric prod or a hurdle (transported for 2 hours)

Salivary cortisol ($\mu\text{g/dl}$)



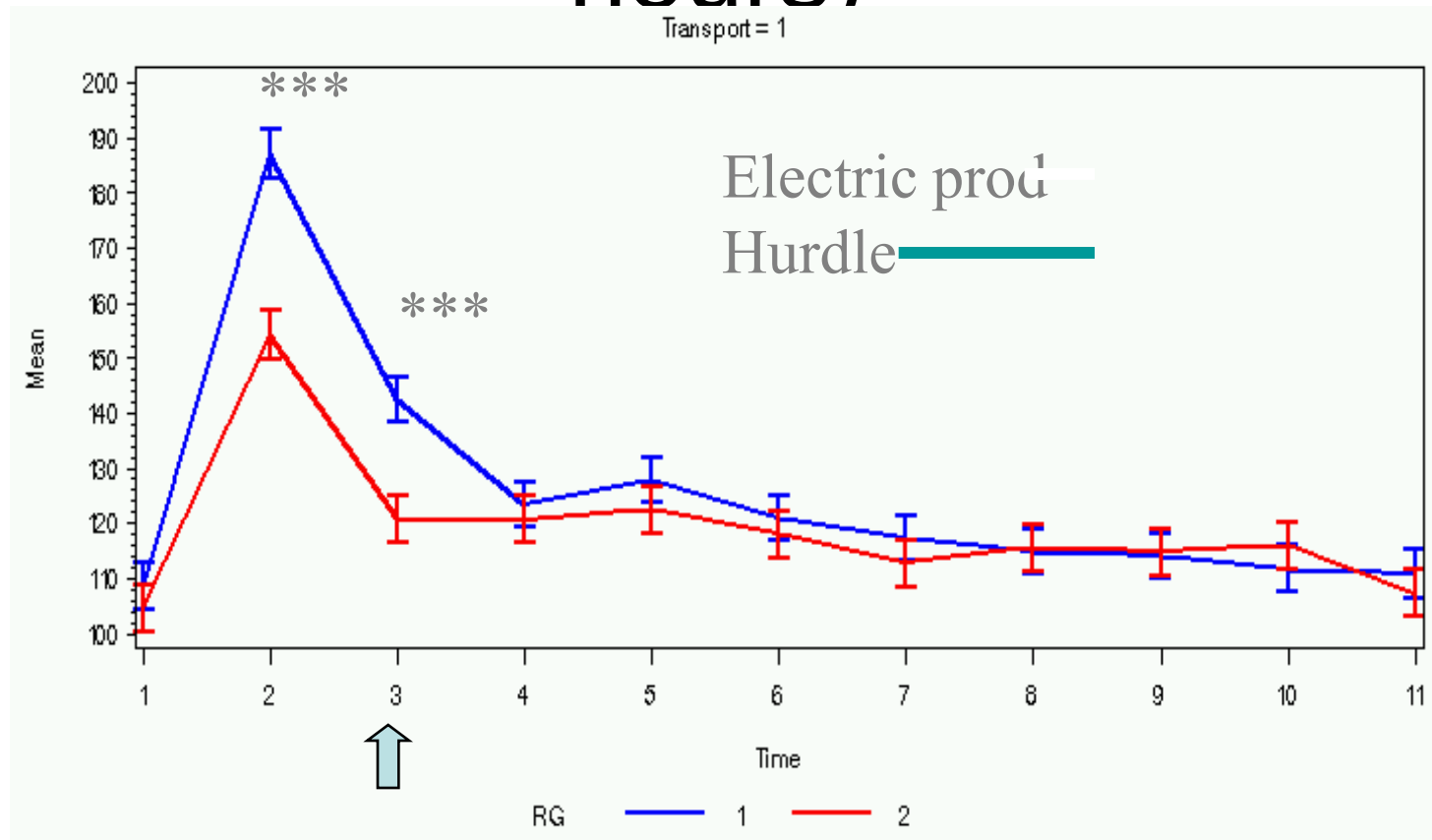
Pigs loaded using electric prod or hurdle (stationary trailer)

Salivary cortisol ($\mu\text{g/dl}$)



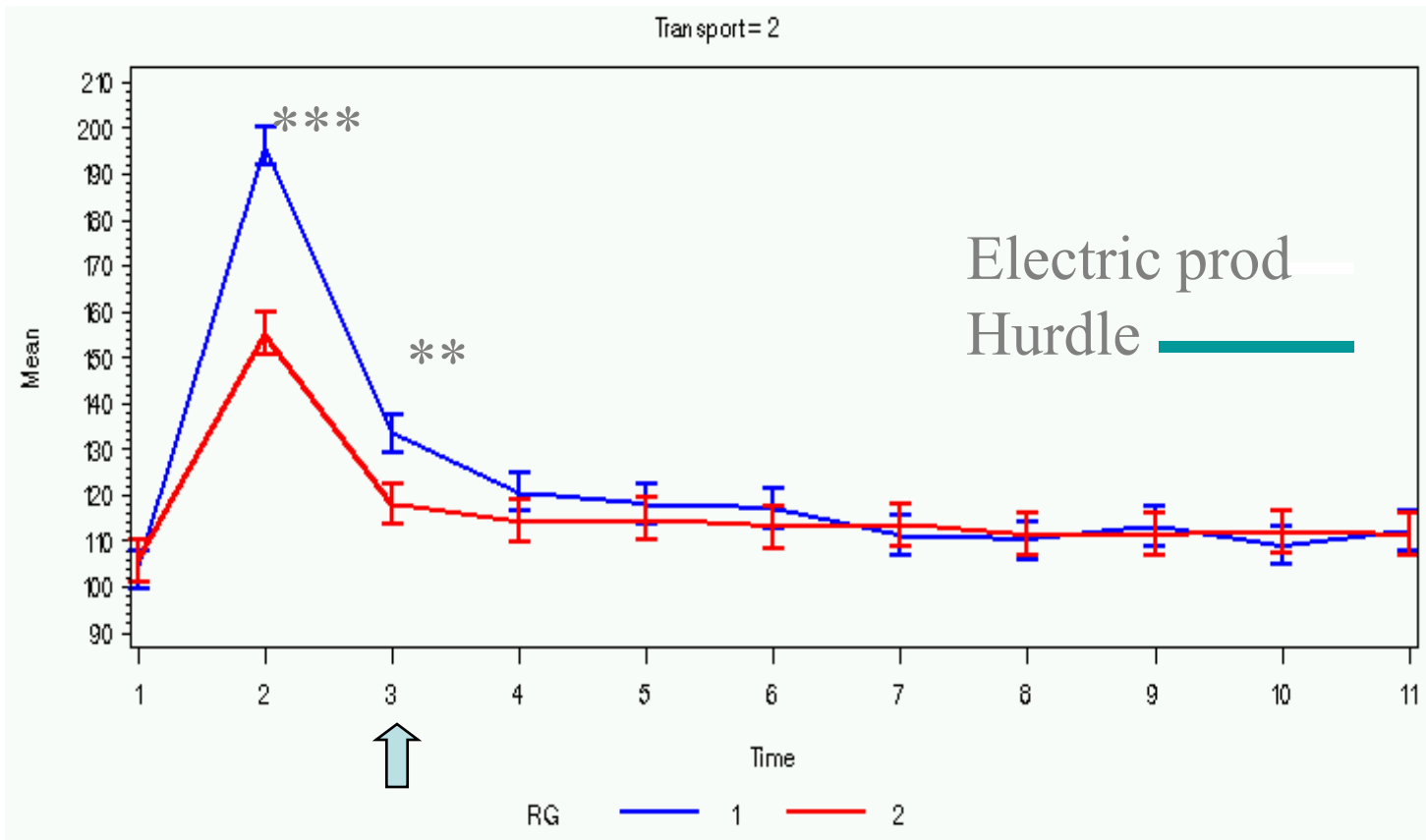
Heart rate in pigs loaded using an electric prod or a hurdle (transported for 2 hours)

Mean heart rate (beats/minute)

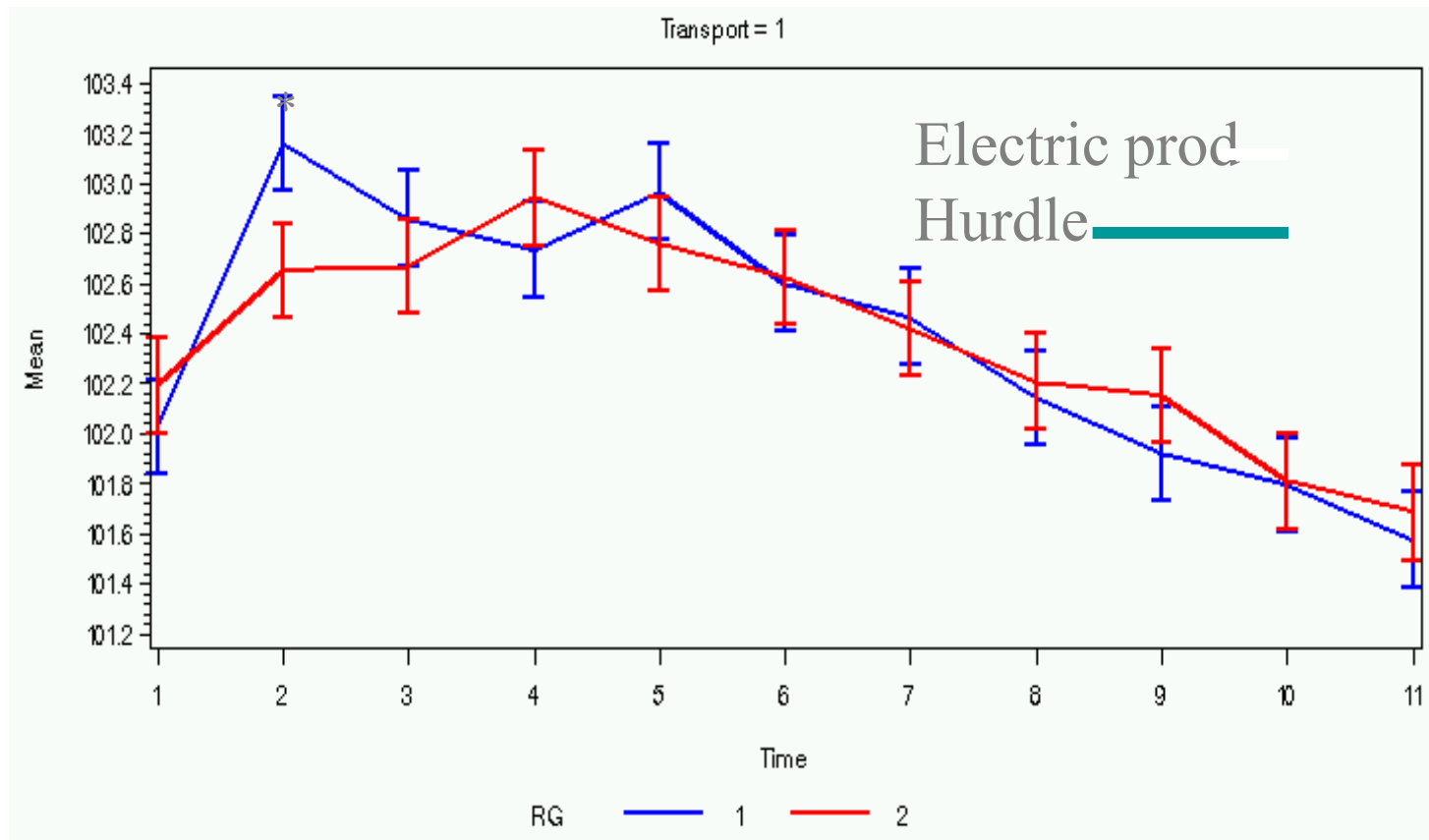


Heart rate of pigs loaded using an electric prod or a hurdle (stationary trailer)

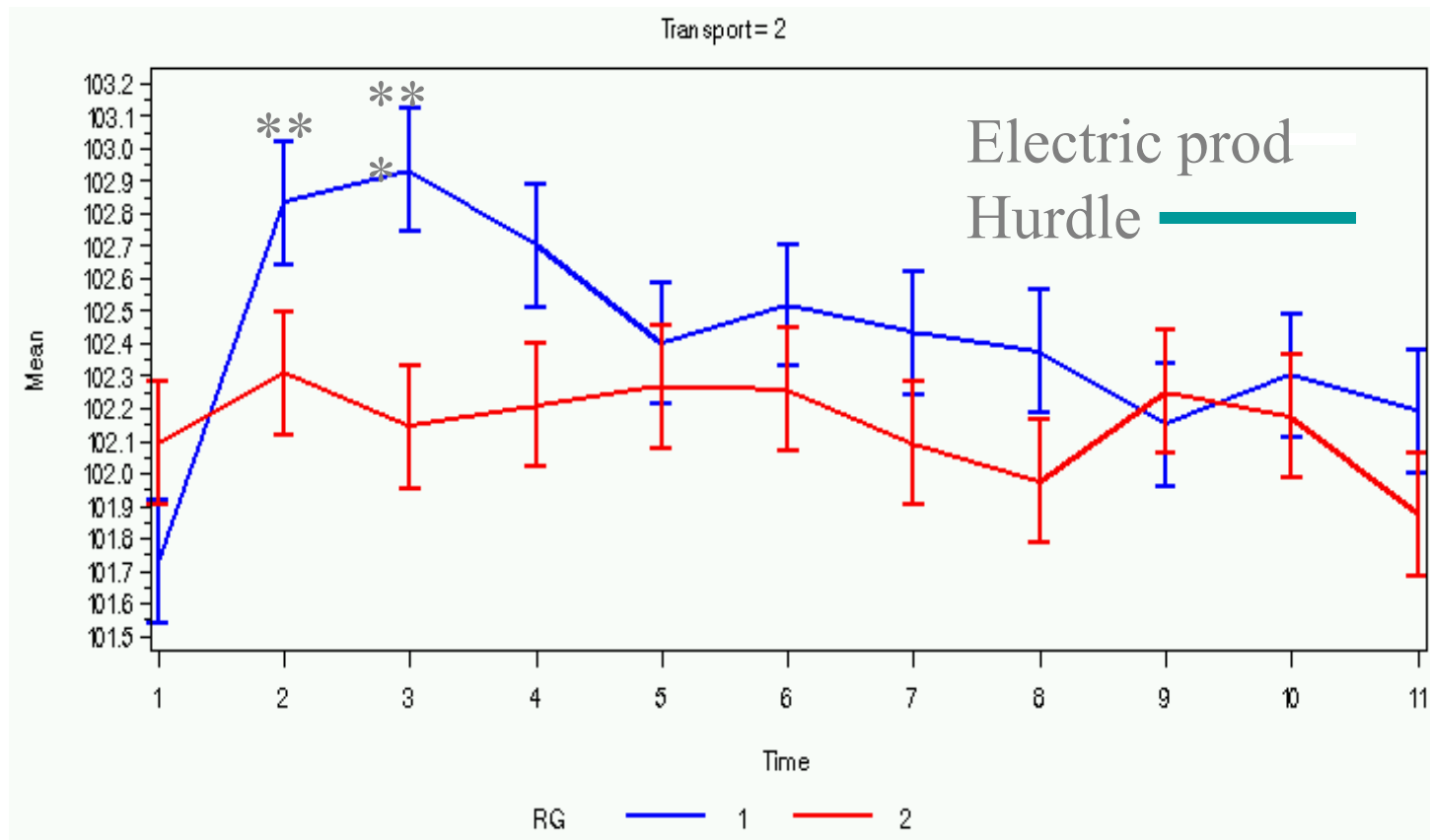
Mean heart rate (beats/minute)



Rectal temperature in pigs loaded using an electric prod or a hurdle (transported for 2 hours)



Rectal temperature of pigs loaded using an electric prod or a hurdle (stationary trailer)



Acknowledgements

- Temple Grandin for the permission to use her material
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