

Behavioural response to an intermittent stressor is higher in entire compared to castrated male pigs

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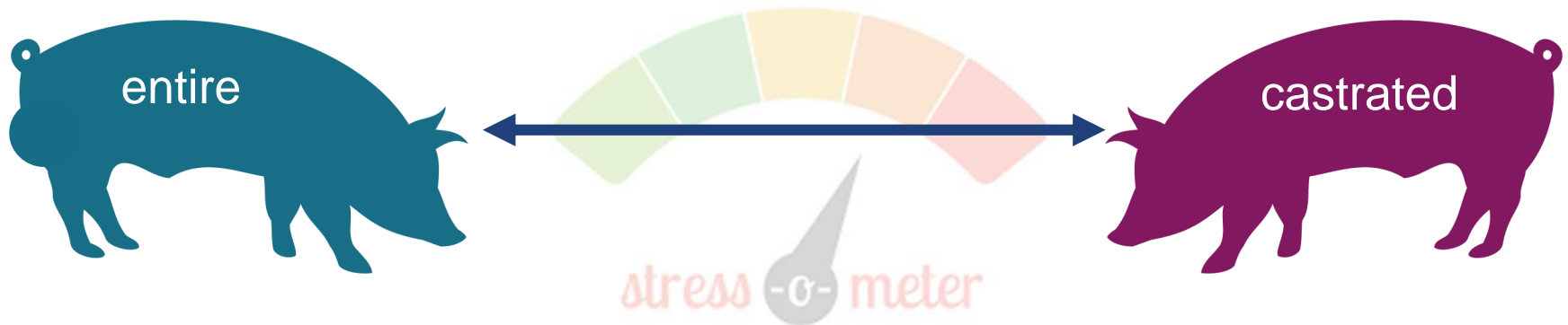


Background

- More skin lesions in entire compared to castrated male pigs (f.e.: Bünger et al., 2015; Holinger et al., 2015)
- More noise and disturbances (experience)
- → Chronic stress?

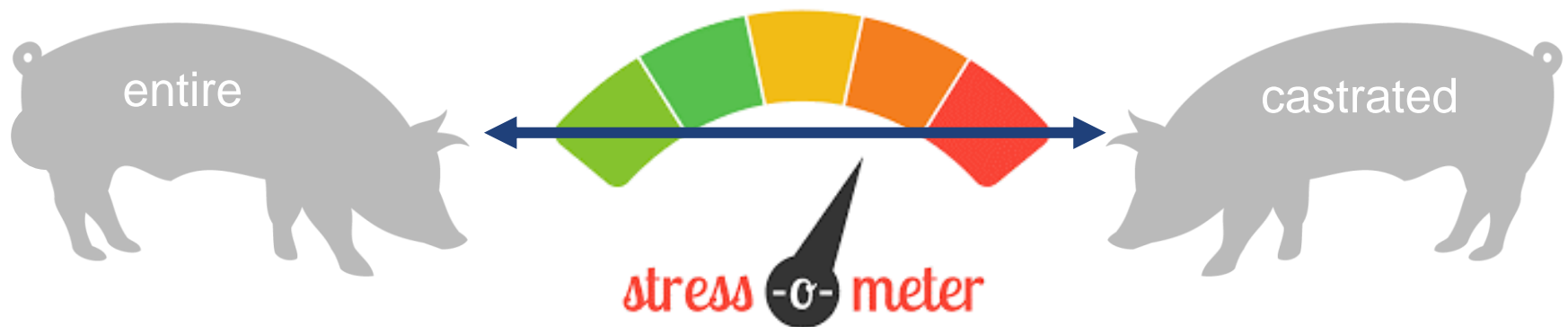
Research questions

- Is chronic stress level increased in entire male pigs?



Research questions

- Is chronic stress level increased in entire male pigs?
- Which reference indicators can be used to assess chronic stress?



Experimental design

2 x 2 x 2 design with

- Castration (entire / castrated)
- Chronic intermittent social stress CIS (with / without)
- Grass silage (with / without)

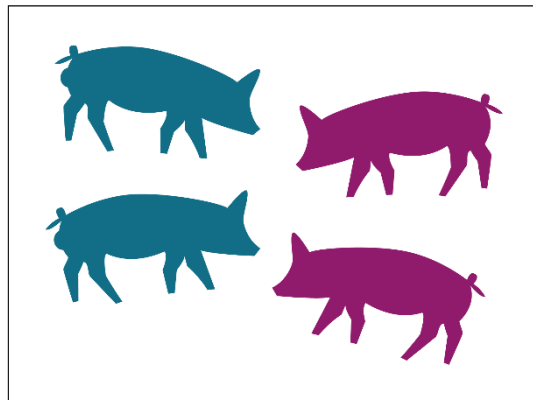
- Groups of 3 fattening pigs
- 6-7 repetitions per group
- in 4 runs
- Total of 147 pigs

Stress treatment

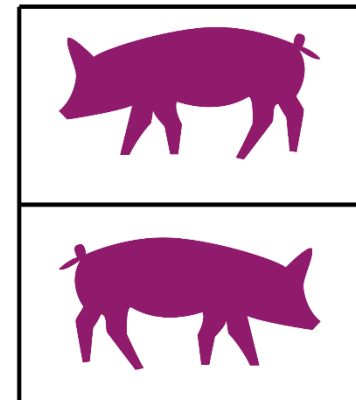
Chronic intermittent social stress treatment CIS:

- 10 x 30 min confrontations of 2 focal pigs
- 6 x 20 min separations

10 x



+ 6 x

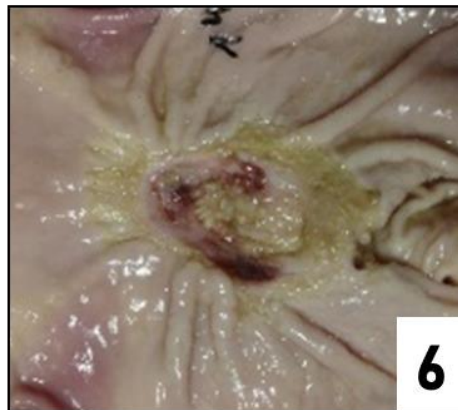
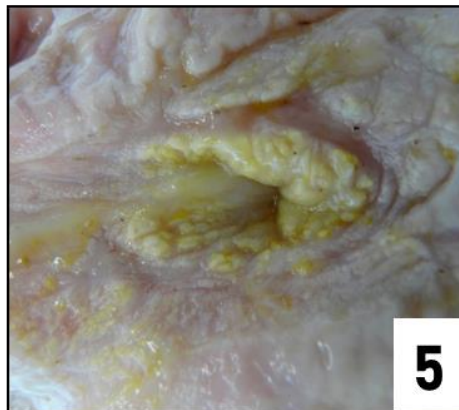
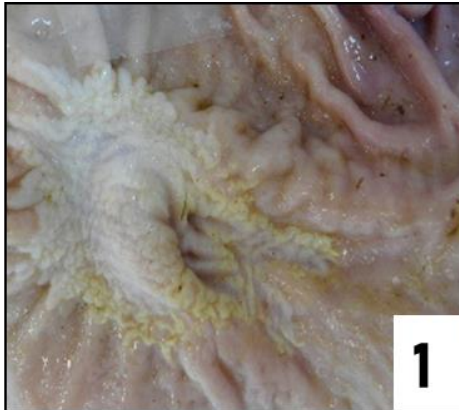


Data collection - behaviour

- Video observations
- 2 days each at beginning, mid and end of fattening period
- 9 x 10 min throughout the day
 - Lying, sitting, standing
 - Feeding behaviours
 - Agonistic behaviours
 - Manipulations of pen mates
 - Play behaviour

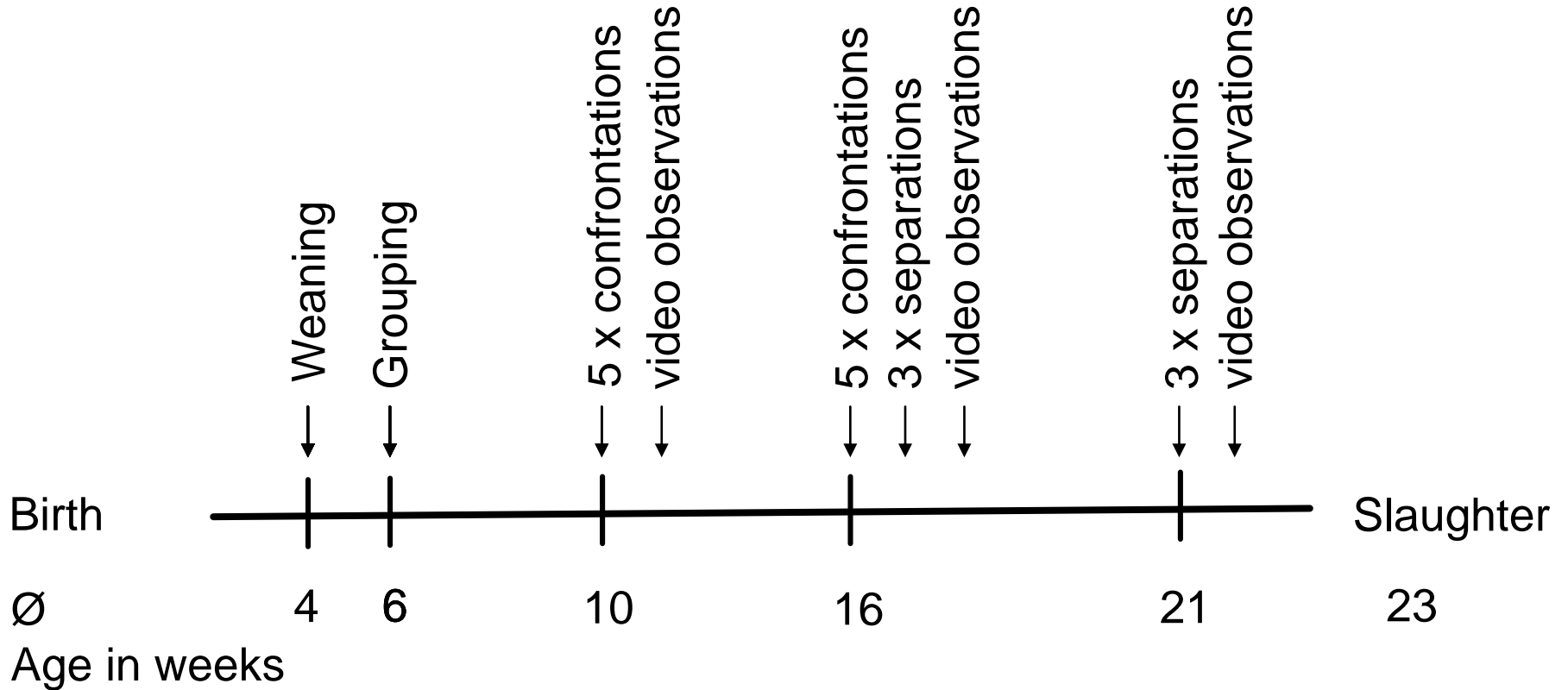


Data collection - stomach



- 0 = no change
- 1-4 = increasing hyperkeratosis
- 5 = Erosions
- 6 = Ulcer

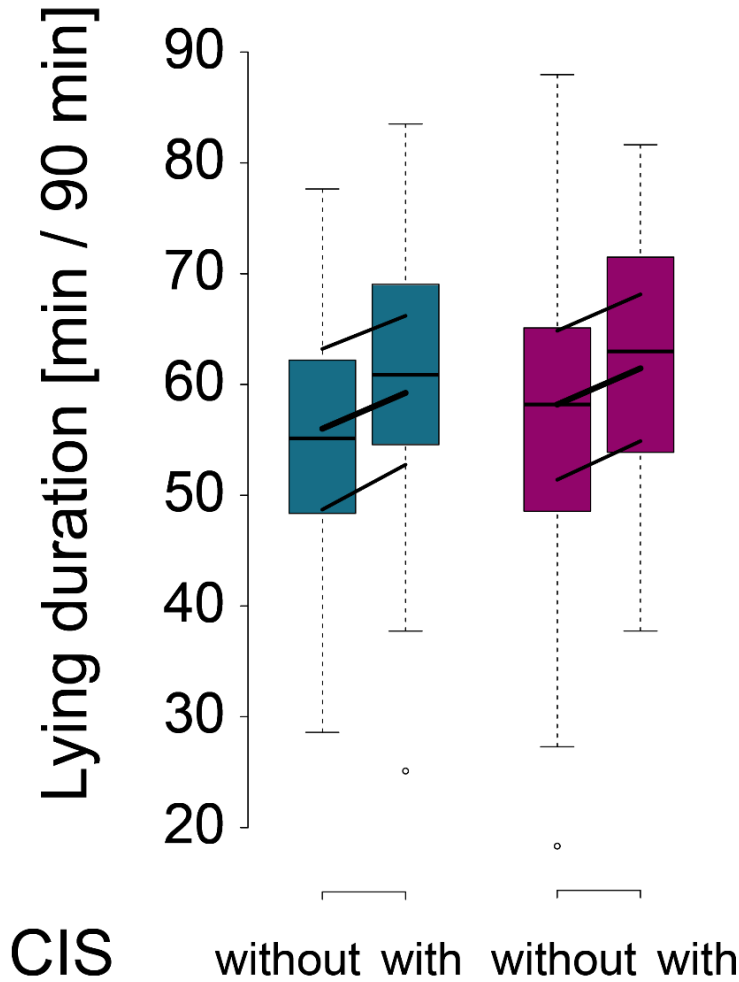
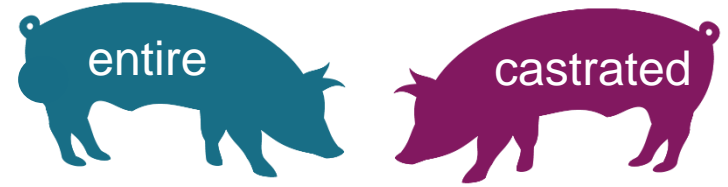
Timeline



Data analysis

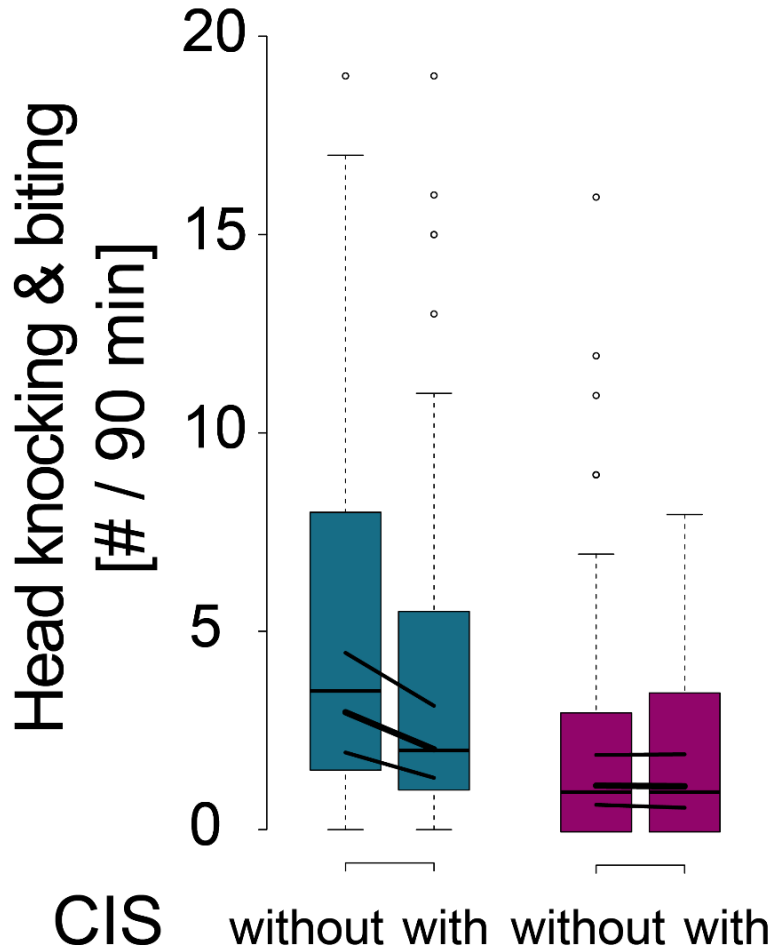
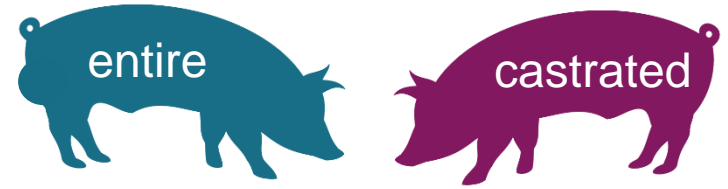
- (Generalized) linear mixed effect models with R including
 - Castration * stress * grass silage as fixed effects (plus period)
 - Nested random effects
- Parametric Bootstrap for p -values and model estimates

Results - behaviour



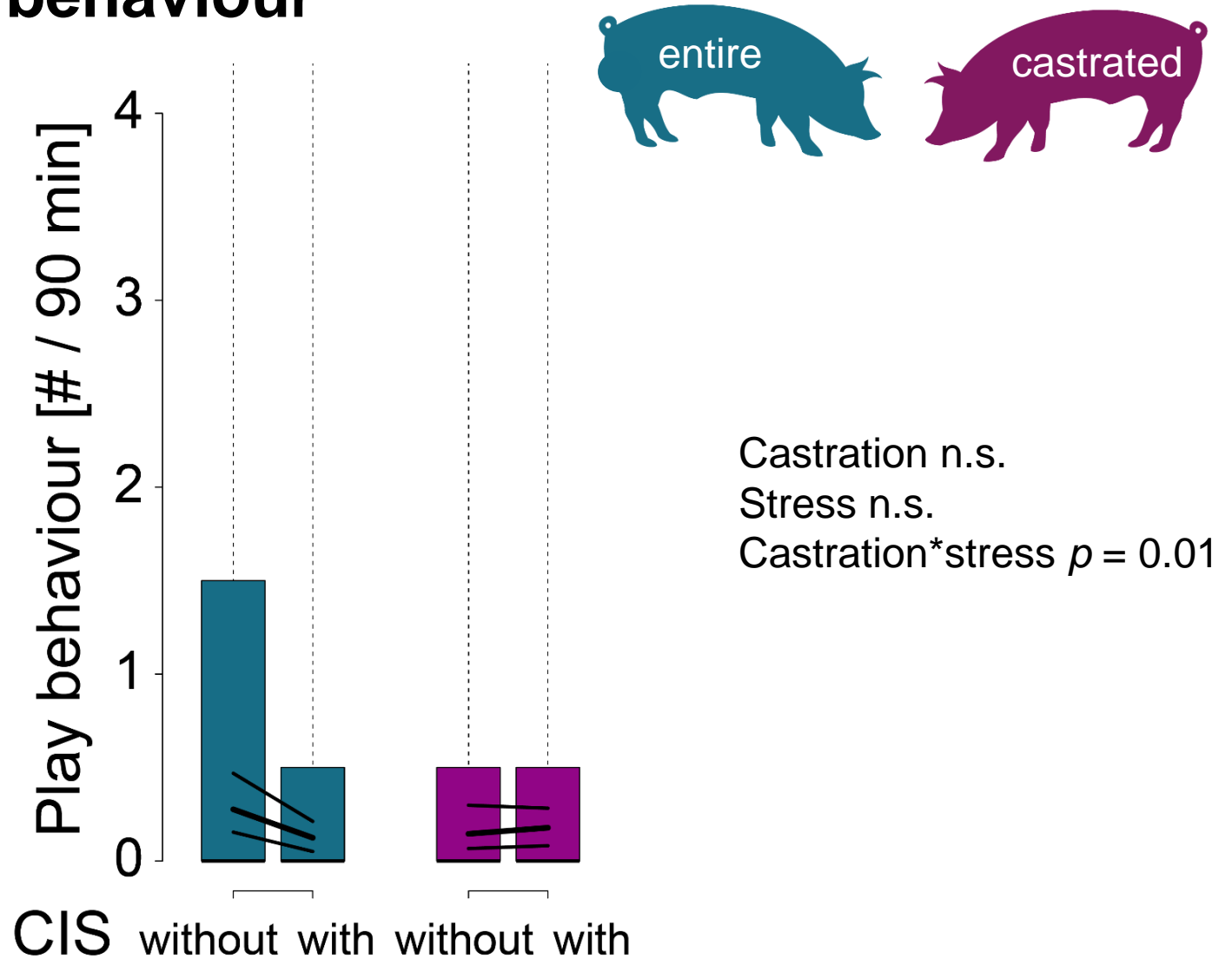
Castration n.s.
 Stress $p = 0.07$
 Castration*Stress n.s.

Results – behaviour

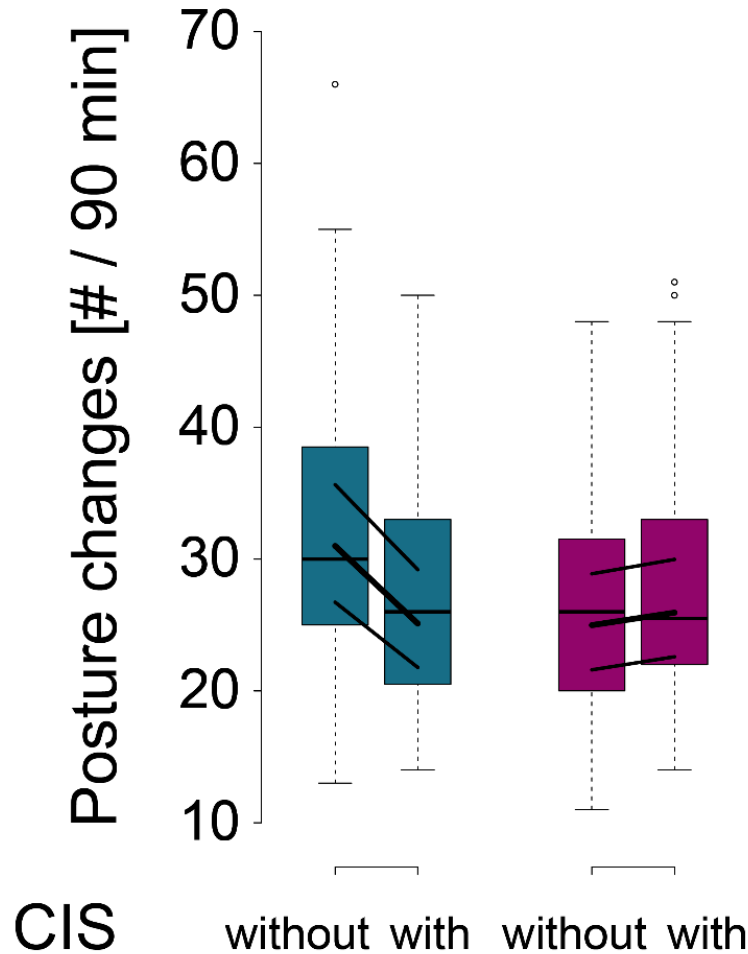
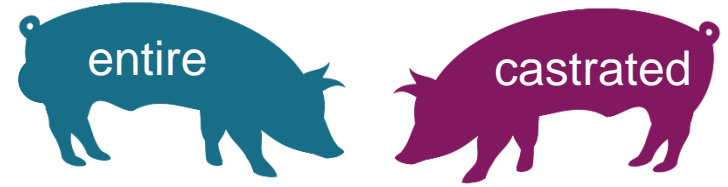


Castration $p < 0.01$
 Stress $p = 0.04$
 Castration*Stress n.s.

Results – behaviour

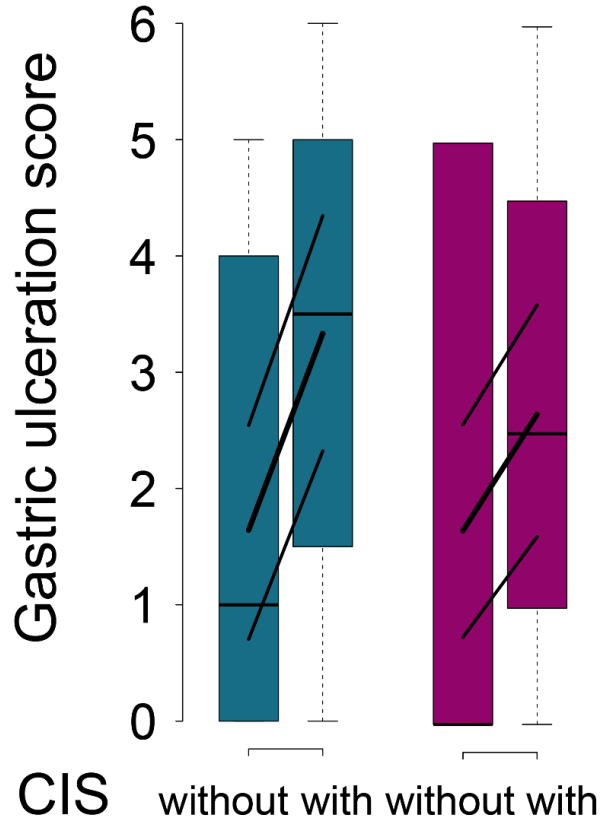
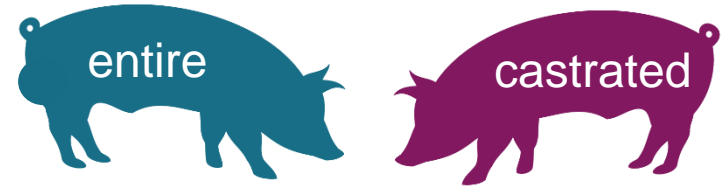


Results – behaviour



Castration n.s.
 Stress $p = 0.07$
 Castration*Stress $p = 0.01$

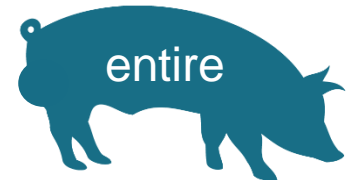
Results – stomach



Castration n.s.
 Stress $p < 0.01$
 Castration*Stress n.s.
 Grass silage $p < 0.01$

Discussion & conclusions

- Stress treatment slightly reduced posture changes and agonistic behaviour
→ potential reference indicators
- Stress treatment increased gastric ulceration
→ gender-independent reference indicator
- No increased baseline level of chronic stress in entire male pigs
- But: CIS treatment caused higher behavioural stress response
→ implications for management & housing?



Further information

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Chronic intermittent stress exposure and access to grass silage interact differently in their effect on behaviour, gastric health and stress physiology of entire or castrated male growing-finishing pigs



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Long-term effects of castration, chronic intermittent social stress, provision of grass silage and their interactions on performance and meat and adipose tissue properties in growing-finishing pigs



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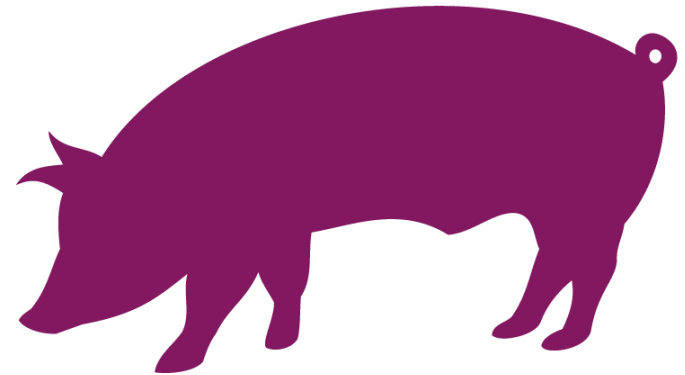
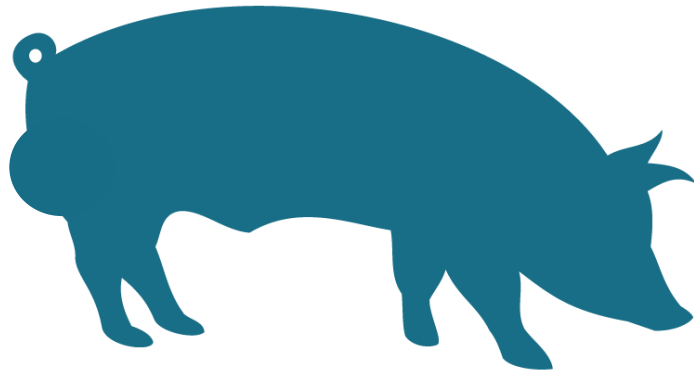
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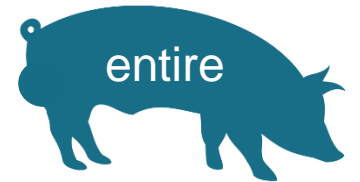
**Thank you &
thanks to all who supported this study!**

Federal Food Safety and
Veterinary Office
BLV



Discussion & conclusions

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→ gender-independent reference indicator
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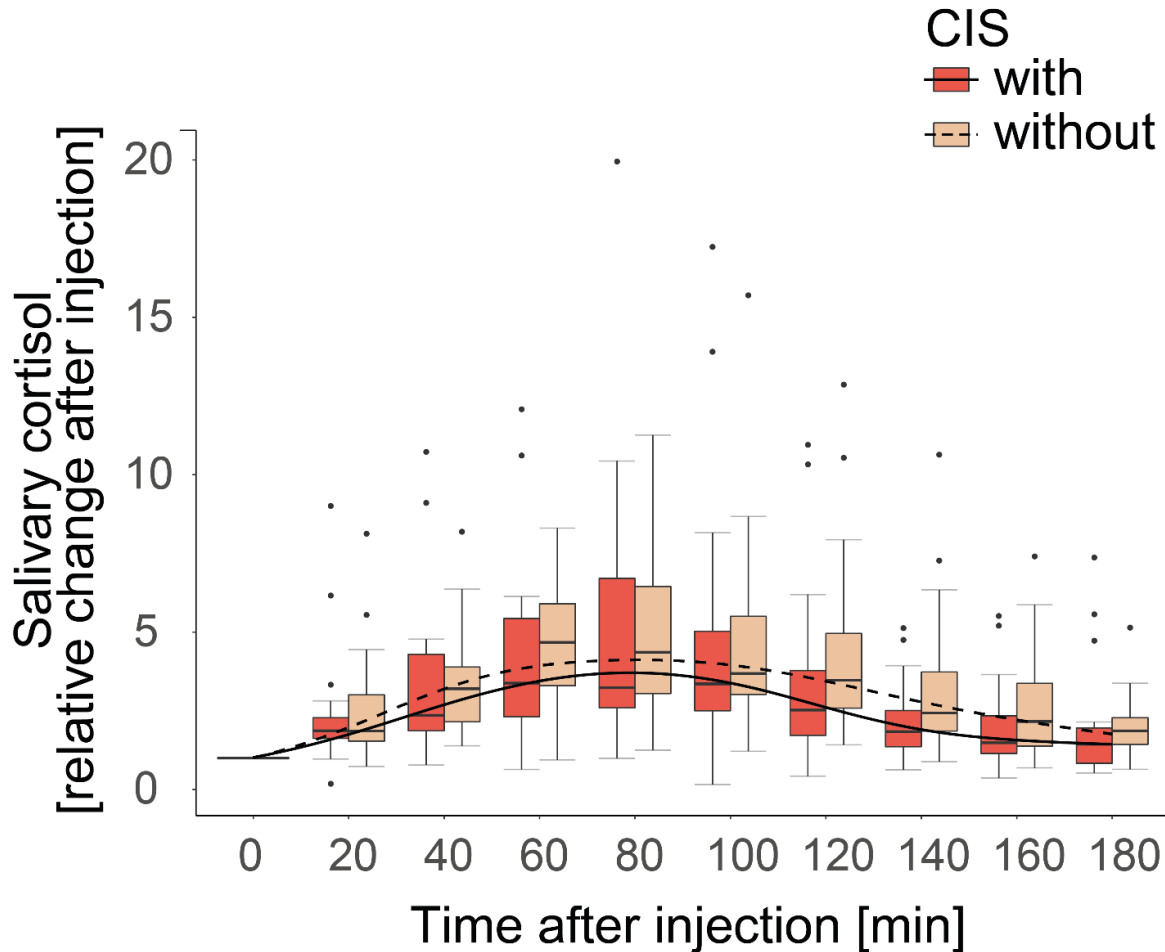


Data collection – ACTH Challenge Test

- With approx. 18 weeks
- One focal pig per group
- Injection of Synacthen i.m.
- Collection of salivary samples every 20 min during 3 hours



Results - ACTH Challenge Test



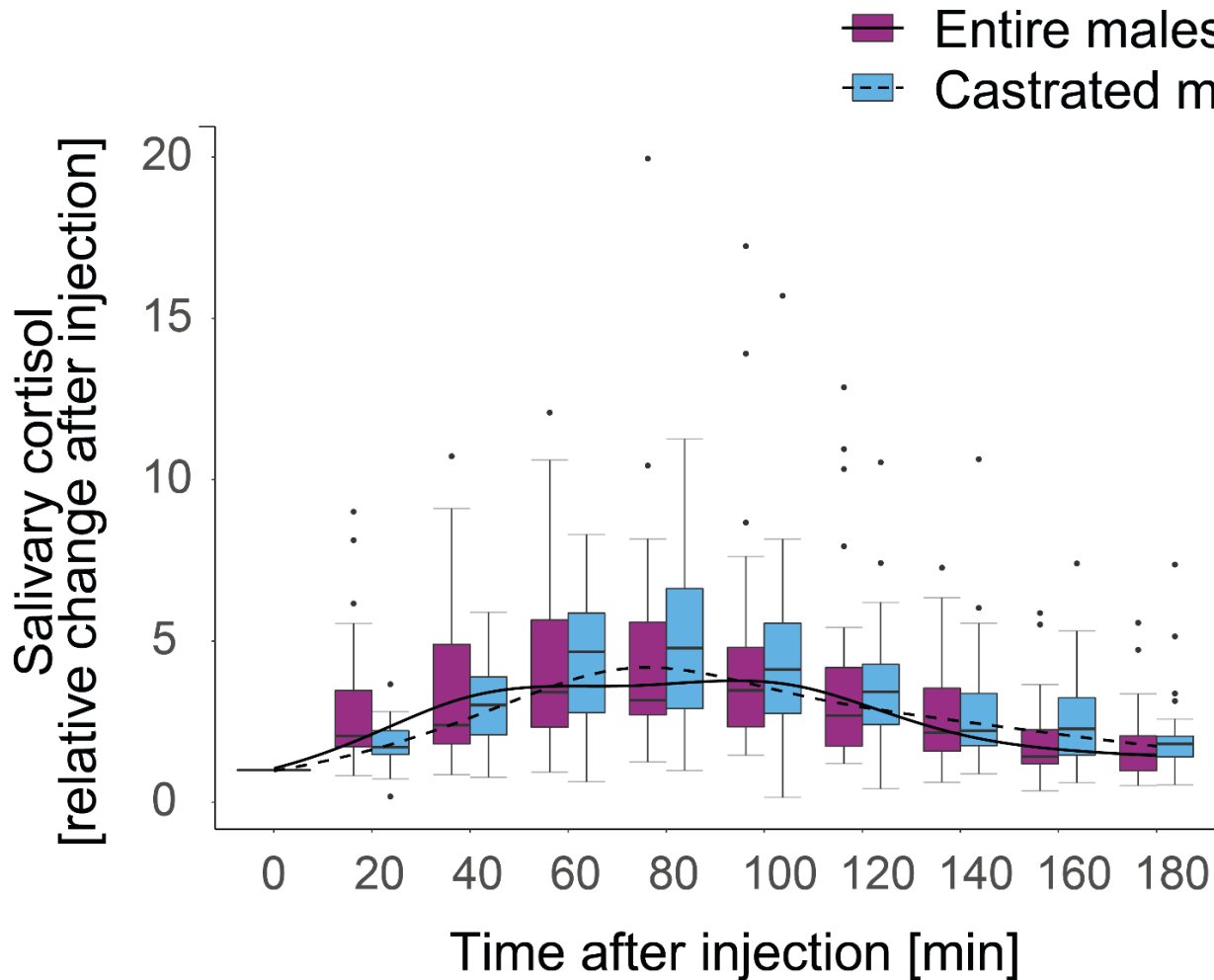
Castration n.s.

Stress n.s.

Time * Stress $p = 0.06$

Time * Castration $p < 0.001$

Results - ACTH Challenge Test

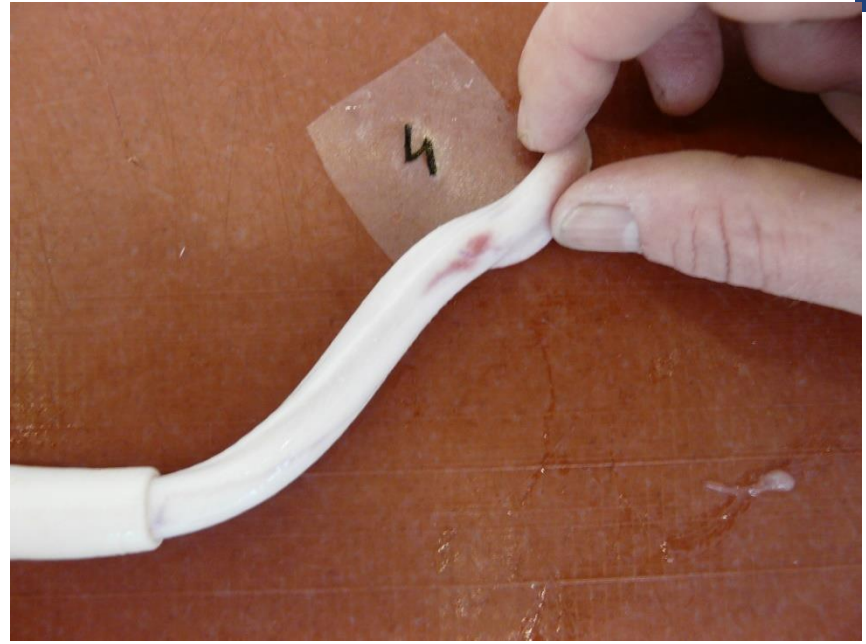


Castration n.s.

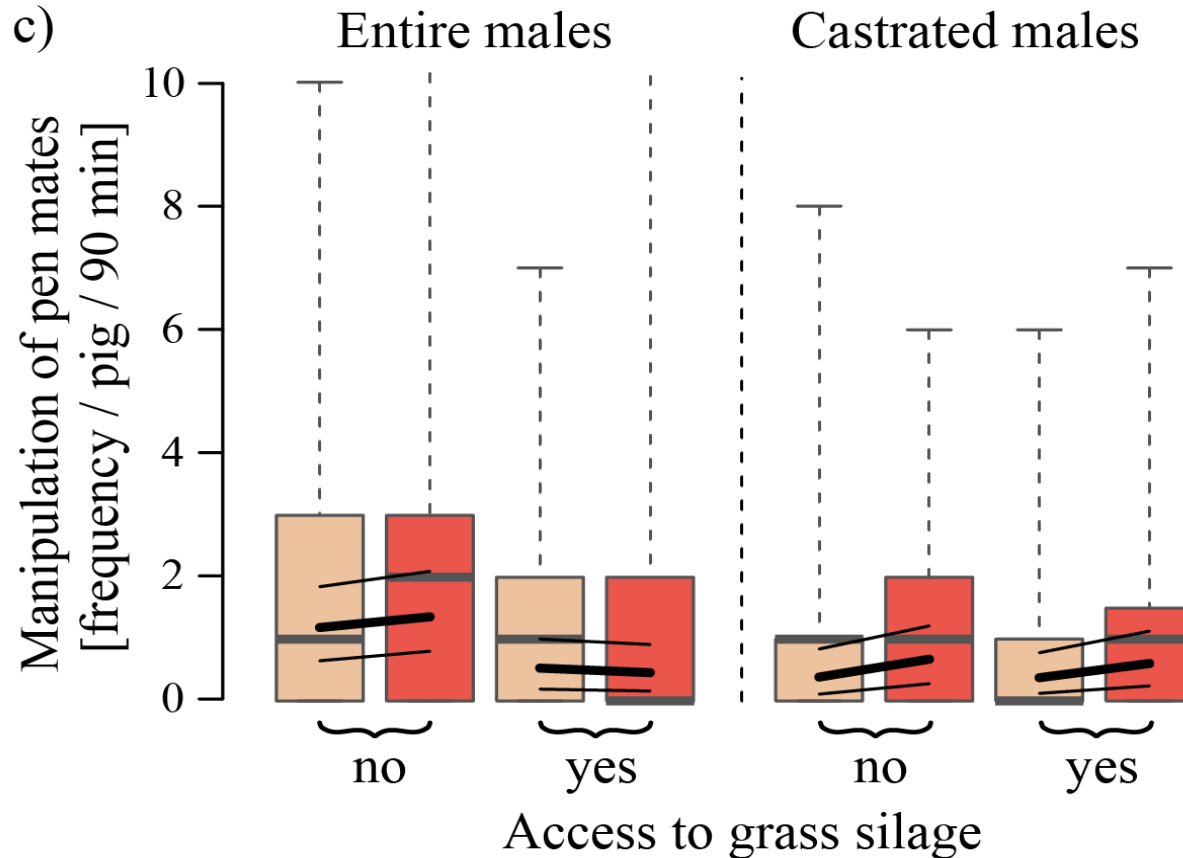
Stress n.s.

Time * Stress $p = 0.06$

Time * Castration $p < 0.001$



Results - manipulations



CAS $P = 0.01$; SIL $P = 0.01$; CAS \times SIL $P = 0.01$