Effect of pen design on tail and pen mate directed behavior of finishing pigs with intact tails

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Introduction

• Routine tail docking is not allowed (Bekendtgørelse 324 af 6 maj 2003 om halekuperig og kastration af dyr)

• Despite this, approx. 95% of pigs in Germany, France, The Netherlands, Belgium, Ireland, Spain and Denmark are docked

• Tail docking is considered the most effective method to decrease tail biting.

• Tail biting is multifactorial: pen design, ventilation, feeding, access to resources and management are among important factors, but tail biting also occurs in free range and organic production systems.
Introduction

• In Sweden docking is prohibited
  • Prevalence of tail bitten pigs at meat inspection of 1-2% (Nannoni et al. 2017)

• Swedish pen design differ from traditional Danish pen design:
  • Reduced group size (10-12 pigs/pen)
  • Increased % solid floor area
  • Reduced stocking density
  • Straw
Aim and hypothesis

• ... to test a Swedish inspired pen design with reduced risk of tail biting for finishing pigs with intact tails.

• ... to compare social behaviour, focusing on pen mate directed behaviour particularly tail directed behaviour in finishing pigs in two different pen designs.

• Hypothesis: that Swedish inspired pen design will reduce the prevalence of pen mate directed behaviour and tail biting.
Materials and methods

- 1 commercial Danish herd
- Finishing pigs with intact tails (20 kg -> slaughter)
- Fed 3 times/day (approx. at 9 am, 1pm and 8pm)
Pen 1 (DK)

- 0.7 m²

- Group size of 15 pigs/pen
- 1/3 solid floor, 2/3 slatted floor
- Straw provided in rack
- Liquid feed, two pens share one through
Pen 2 (SE)

0.89 m²

- Liquid feeding
- Decreased group size
- Increased proportion of solid flooring
- Straw as enrichment
- Decreased stocking density
- Max 400 finishing pigs/section
Recordings

- Behavioural recordings
- Welfare assessment (Welfare Quality®)
  - Tail biting
  - Productivity

KU

SEGES Pig Research Centre
Behavioural recordings

- Video recordings
- All occurrence: 3 focal pigs/pen: 23 pens (12 SE and 11 DK)
- Observations at: week 2 and 10 after arrival, respectively
- Observation 15 min/hour for 13 hours

Observed 897 quarters of an hour (3 pigs * 23 pens * 13 quarters)
Tail directed behaviour was observed in 118 of 897 quarters of an hour
Table 2  *Ethogram for continuous observations of focal pig behavior*

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tail-directed</td>
<td>Manipulating the tail of a pen-mate including sniffing, moving around and taking the tail into its mouth.</td>
</tr>
<tr>
<td>Ear-directed</td>
<td>The pig had the ear of a pen-mate in its mouth. The pig visibly had the ear in its mouth otherwise “Other pen-mate directed” behavior was recorded.</td>
</tr>
<tr>
<td>Aggression</td>
<td>The pig interacted with agonistic behavior with or towards one or more other pigs including threats, head-knocks, pushings, snaps or bites.</td>
</tr>
<tr>
<td>Other pen-mate directed</td>
<td>Belly nosing, mounting, rooting, pushing or chewing any other part of a pen-mate than tail or ear.</td>
</tr>
<tr>
<td>Feeding/drinking</td>
<td>The head of the pig was in the feeder/drinker.</td>
</tr>
<tr>
<td>Straw/solid floor directed</td>
<td>The pig was active in straw/solid floor directed behavior by rooting chewing or sniffing or carrying straw including activity directed towards the straw rack in PEN1.</td>
</tr>
<tr>
<td>Additional enrichment directed</td>
<td>The pig was active in additional enrichment directed behavior other than straw by rooting, sniffing or chewing.</td>
</tr>
</tbody>
</table>

*adapted from (Oxholm et al., 2014; Amdi et al., 2015; Lahrmann et al., 2015; Paoli et al., 2016)*
# Welfare Quality®

<table>
<thead>
<tr>
<th>Welfare criteria</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Good feeding</strong></td>
<td></td>
</tr>
<tr>
<td>1 Absence of prolonged hunger</td>
<td>Body condition score</td>
</tr>
<tr>
<td>2 Absence of prolonged thirst</td>
<td>Water supply</td>
</tr>
<tr>
<td><strong>Good housing</strong></td>
<td></td>
</tr>
<tr>
<td>3 Comfort around resting</td>
<td>Bursitis, absence of manure on the body</td>
</tr>
<tr>
<td>4 Thermal comfort</td>
<td>Shivering, panting, huddling</td>
</tr>
<tr>
<td>5 Ease of movement</td>
<td>Space allowance</td>
</tr>
<tr>
<td><strong>Good health</strong></td>
<td></td>
</tr>
<tr>
<td>6 Absence of injuries</td>
<td>Lameness, wounds on the body, tail biting</td>
</tr>
<tr>
<td>7 Absence of disease</td>
<td>Mortality, coughing, sneezing, pumping, twisted snouts, rectal prolapse, scouring, skin condition, ruptures and hernias</td>
</tr>
<tr>
<td>8 Absence of pain induced by management procedures</td>
<td>Castration, tail docking</td>
</tr>
<tr>
<td><strong>Appropriate behaviour</strong></td>
<td></td>
</tr>
<tr>
<td>9 Expression of social behaviours</td>
<td>Social behaviour</td>
</tr>
<tr>
<td>****</td>
<td></td>
</tr>
<tr>
<td>10 Expression of other behaviours</td>
<td>Exploratory behaviour</td>
</tr>
<tr>
<td>11 Good human–animal relationship</td>
<td>Fear of humans</td>
</tr>
<tr>
<td>12 Positive emotional state</td>
<td>Qualitative Behaviour Assessment (QBA)</td>
</tr>
</tbody>
</table>
Thank you!

- GUDP
- University of Copenhagen
  - Björn Forkman
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