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BODY POSITIONS OF PIGS IN AN EARLY STAGE OF AGGRESSION

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Body positions of pigs in an early stage of aggression

Contents

- Introduction
- Objective
- Materials and methods
- Results
- Conclusions

- High number of animals
- High density
- Frequent regrouping and mixing of pigs

The soviel structure is continually changing

High levels of aggression among pigs

Aggression

AGONISTIC BEHAVIOUR

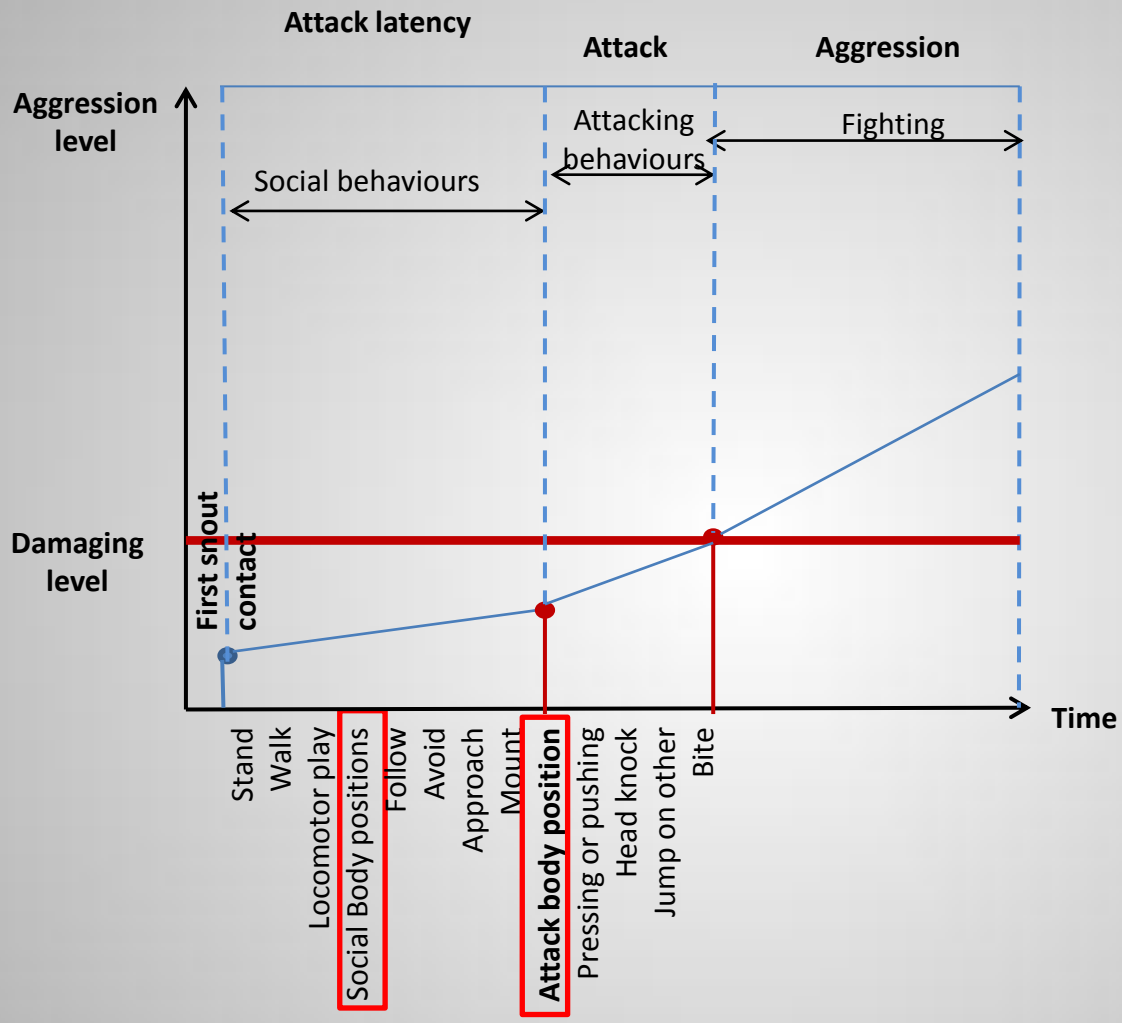
Adverse effects on

- **Animal health and welfare:**

➢ Social Stress
➢ Physical injuries
➢ Pain and suffering
➢ In extreme cases deaths

➢ Reduced Fertility
➢ Lower growth rates
➢ Immunosupression

The way leading to aggression/resident-intruder tests



References: Jensen, P., 1980, 1982; Rushen, J. and Pajor, E., 1987; Erhard et al.,1997, Jensen, P. and Yngvesson, J., 1998.; D'Eath and Pickup, 2002

To find a Precision Livestock Farming (PLF) solution to the problem

Early automatic detection of aggression before encounter escalation

To find early signs of aggression to be detected in automatic way from the video image

Objective

Pigs body positions characterising aggressive behaviour, could be detected on the image automatically

Label every single aggressive interaction to detect early sign body positions pigs adopt

Material and methods

Camera

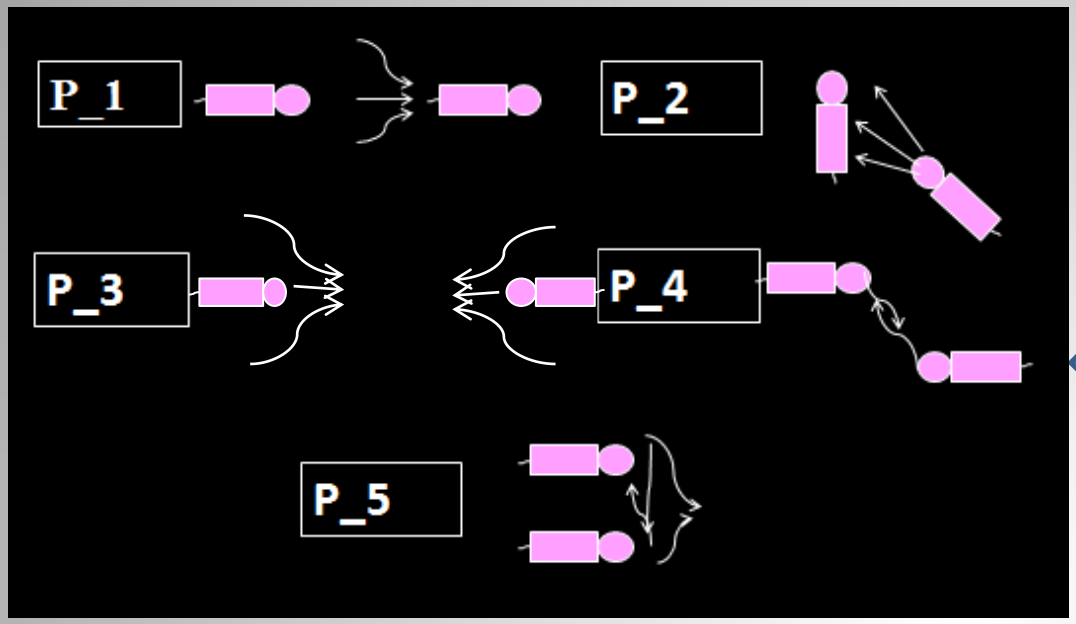
Commercial farm in the Netherlands

- 1 pen with 11 pigs;
- 23 kg – average weight;
- Non-castrated males;
- Pen size – 4m x 2,5m;
- Computer connected to the camera (2,3m above the floor);

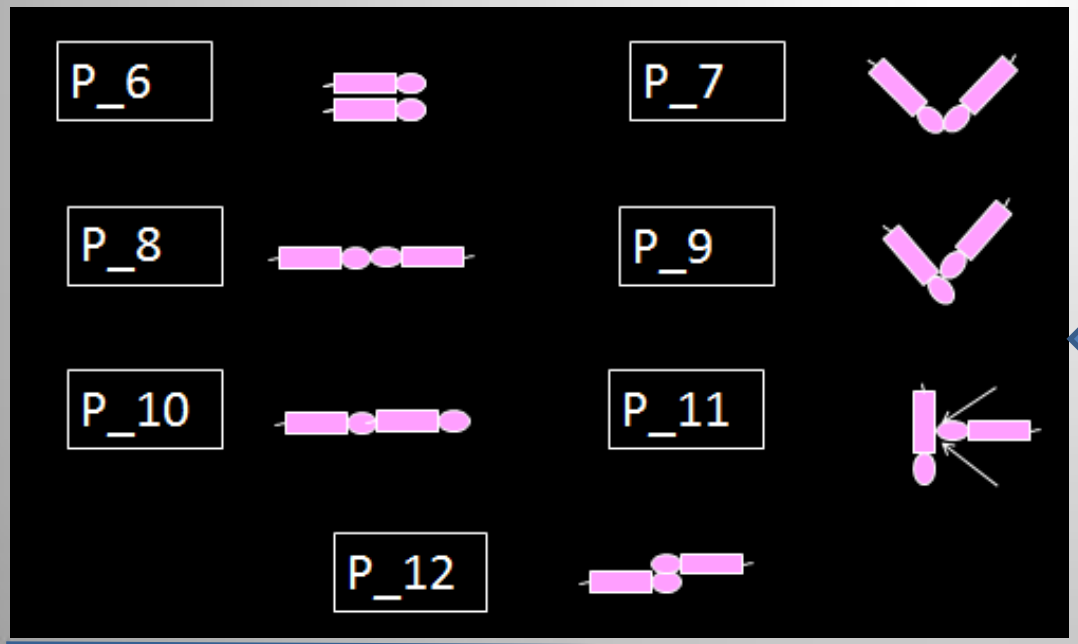
3-days video recordings after regrouping (8 hours of video);

LABELLING OF THE VIDEOS

- **12 Pre-sign positions** (P1-P12)/ 7 attack positions



Distance pre-sign positions



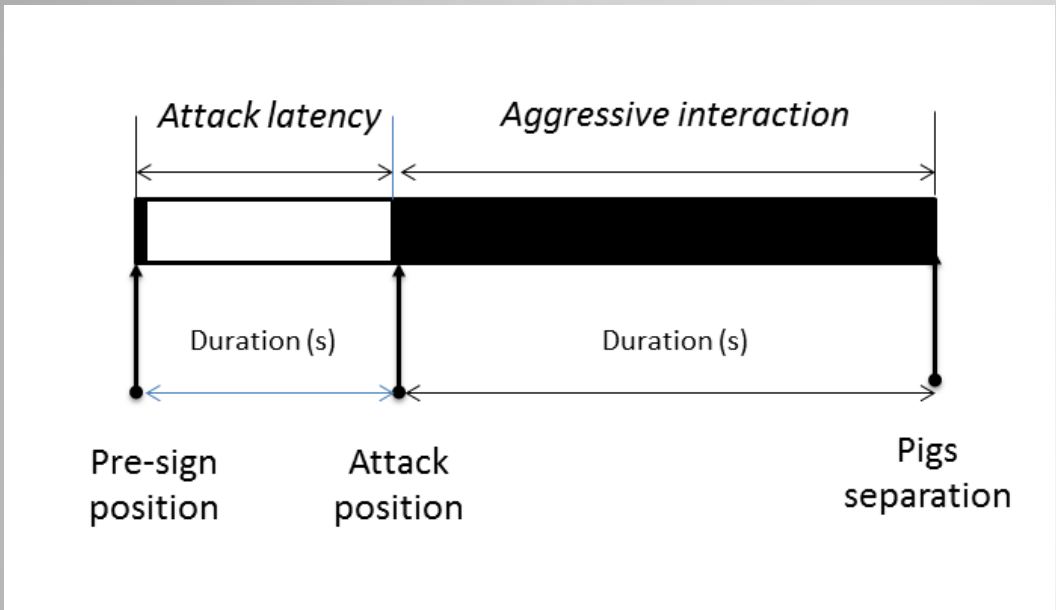
-Contact pre-sign positions
-Attack positions

Material and methods


P_3


P_12

Labelling approach



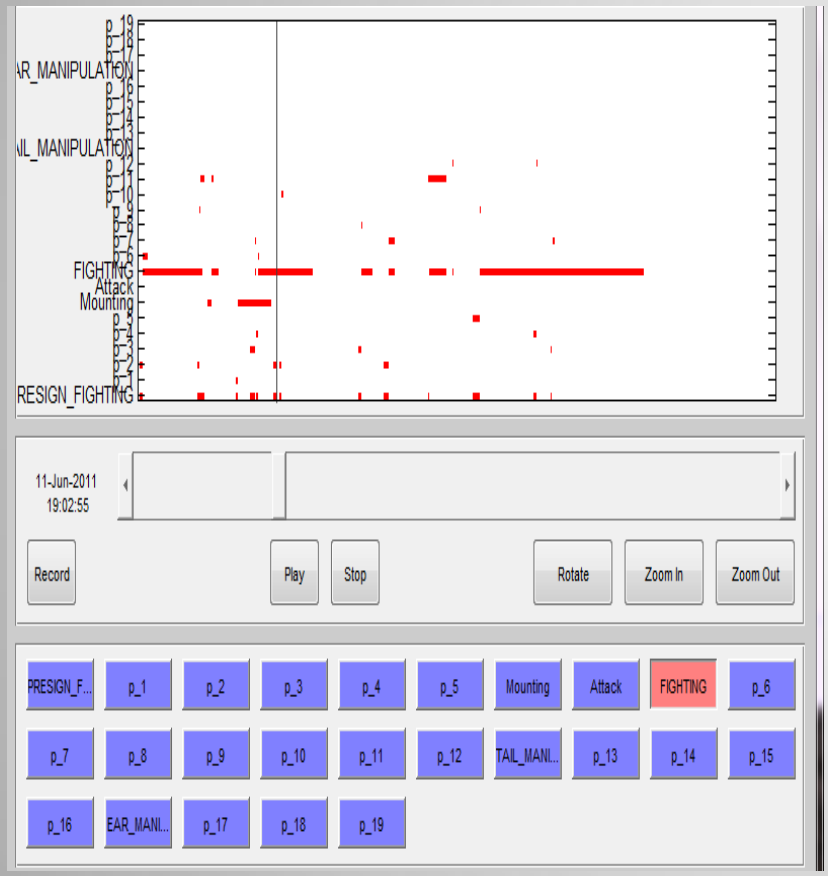
If the pre-sign position is noticed less than 1 sec before the start of aggressive interaction-
No pre-sign (P_0)

Labelled variables:

- *Pre-sign position*
- *Duration attack latency*
- *Attack position*
- *Duration interaction*

Material and methods

Labelling tool interface



Observation each interaction: 11 frames per second

Material and methods

Labelled from 8 Hours of video recordings:

177 Aggressive interactions

Duration: 1-5 sec-41%

6-10sec-30.5%

More than 50 sec-4.5%

Duration aggressive interaction

Codes pre-sign position	Duration LSM± SE	Significance***
Distance positions		
P1	0.8±1.0	NS
P2	1.6±0.4	***
P3	1.5±0.3	***
P4	1.5±0.7	*
P5	2.8±0.7	***
Contact positions		
P6	1.0±1.2	NS
P7	1.67±1.2	NS
P8	2.8±0.8	**
P9	2.3±1.2	*
P10	1.5±1.4	NS
P11	0.5±1.4	NS
P12	3.6±0.7	***
P13	13.3±1.0	***

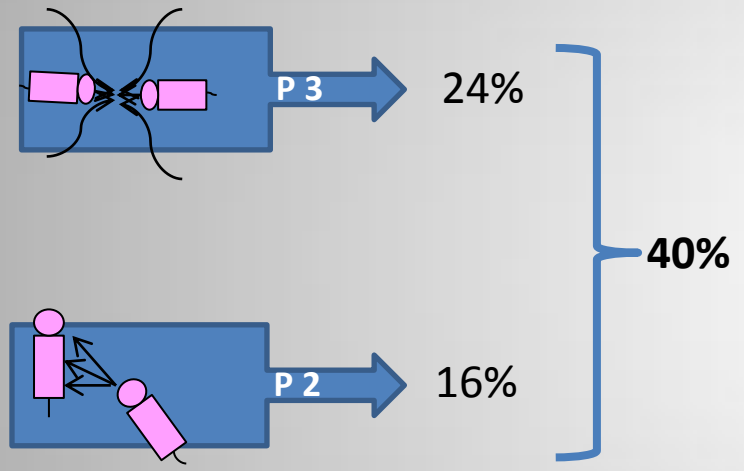
Duration attack latency

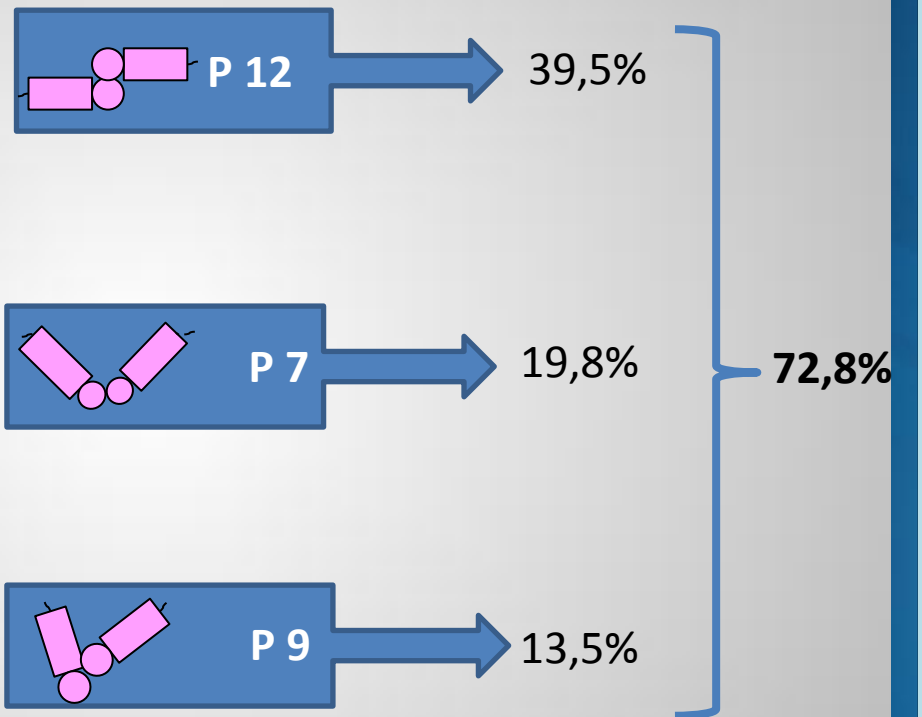
Attack latency duration 1-2 sec in 80% of pre-signs

Results

Pre-sign positions

Attack positions

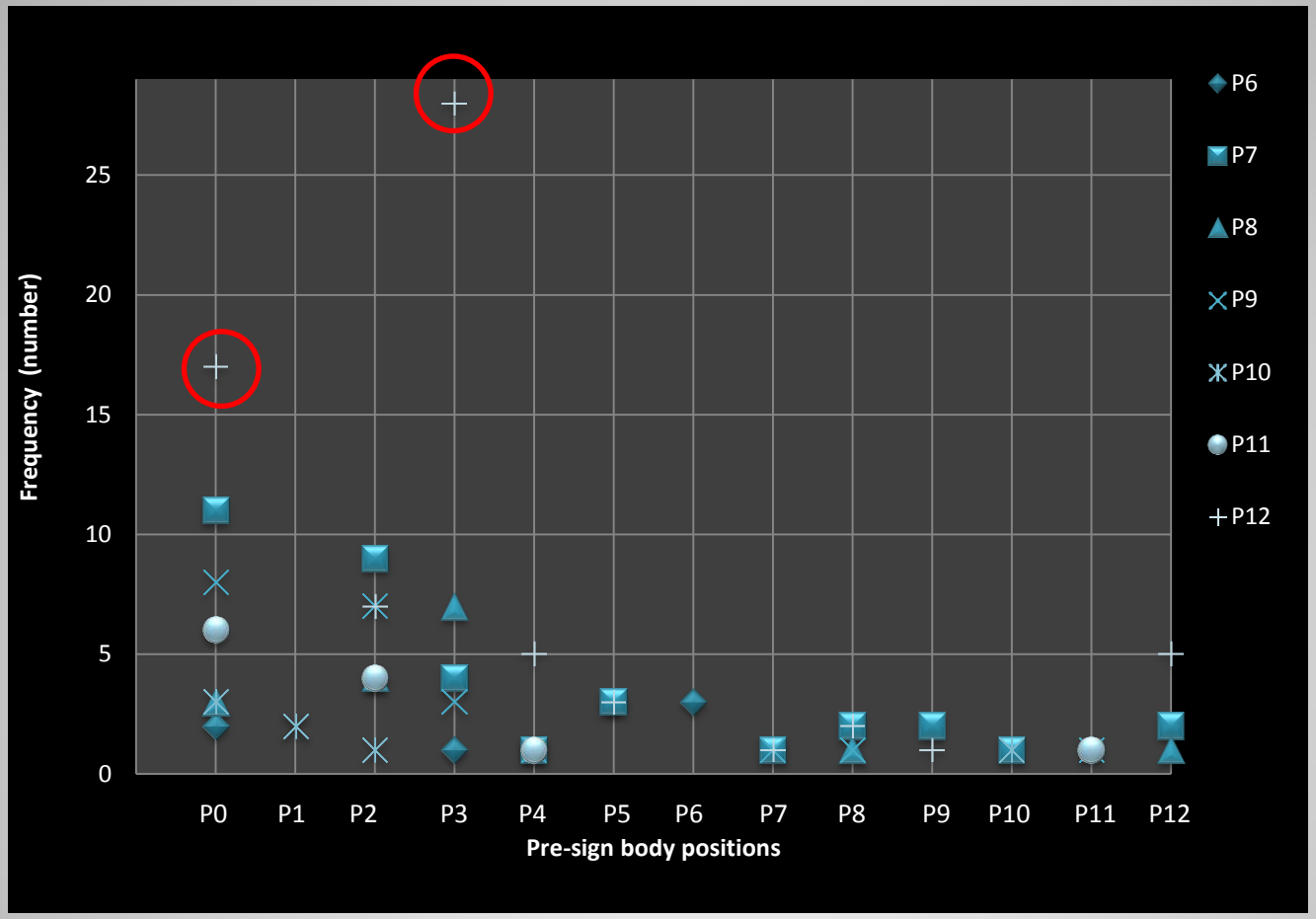


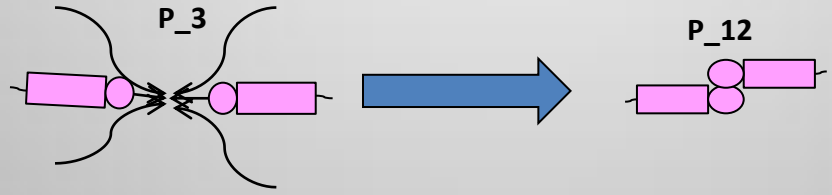


No pre-sign=28,3%

Results

Results


Frequency (number)
0
5
10
15
20
25
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
Pre-sign body positions
P6
P7
P8
P9
P10
P11
P12


P_3
P_12

Conclusions

- In 70% of 177 investigated aggressive interactions of young fattening pigs pre-signs of aggression could be detected by the used video labelling technique.
- Two distance positions (P3 and P2) and three attack positions (P12, P7 and P9) are dominating and could be used for early detection of aggression.
- In 80 % the attack latency had a duration of 1 to 2 seconds depending on the pre-sign position.
- Our results indicate that there is a potential for early identification of aggression before the escalation of aggressive acts among pigs.

Thank You

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