

➤ Analysis of the effects of temporary outdoor access during the fattening phase on pig welfare, health and growth

75th EAAP Annual Meeting – Florence, Italy

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➤ Context

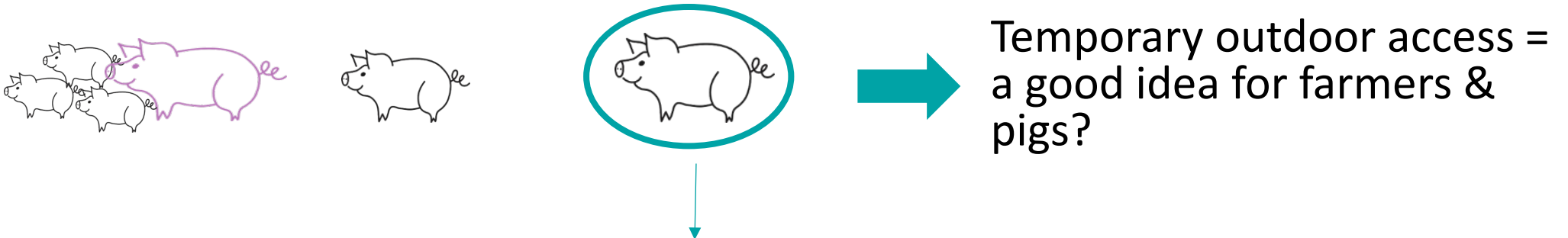
European Union: less than 1% of pigs are raised with access to outdoor areas



Outdoor run



Free-range system



Temporary outdoor access =
a good idea for farmers &
pigs?

Fattening phase = the longest phase in pig breeding (3 months)
which concerning more mature individuals

Which effects on animal health, welfare & performances?

➤ Animals & treatment

Batch 1



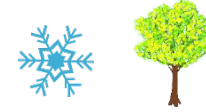
Summer

Batch 2



Winter

Batch 3



Winter-Spring



For a total of 300 pigs
Housed in a conventional barn
Homogenously allocated to groups with respect to sex,
litters & weight



25 ♀ & 25♂ per batch



O-: Without any outdoor access

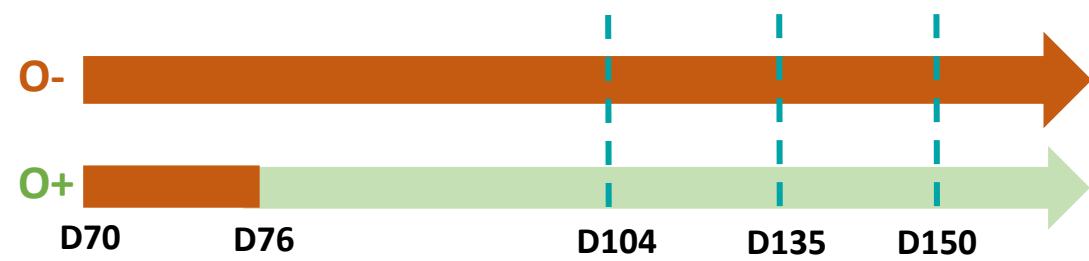
25 ♀ & 25♂ per batch



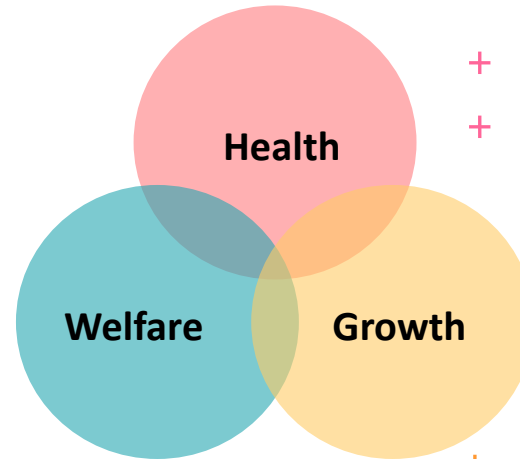
O+: With outdoor access, 8h/week in pasture
during mornings

Followed from D76 (start fattening phase) to D160 (end)

➤ Data collection & statistical analysis



- + Indoor/Outdoor behaviour by scan sampling
- + Assessment of body injuries (**D150**)
- + Quantification of stress: cortisol from saliva (**D104 & D150**) & hair (**D150**)



- + Recording of clinical signs
- + Assessment of immune competence: *CBC, phagotest, whole blood assay, lymphocyte phenotyping, salivary IgAs* (**D135**)
- + Growth monitoring (**D133 & D150**)
- + Consumption index

The data were normalised using log transformation & linear mixed effects models were used.

Treatment effects (O- vs. O+) and interactions were tested.

Raw data are plotted and only significant differences are highlighted.

➤ Recording of clinical signs

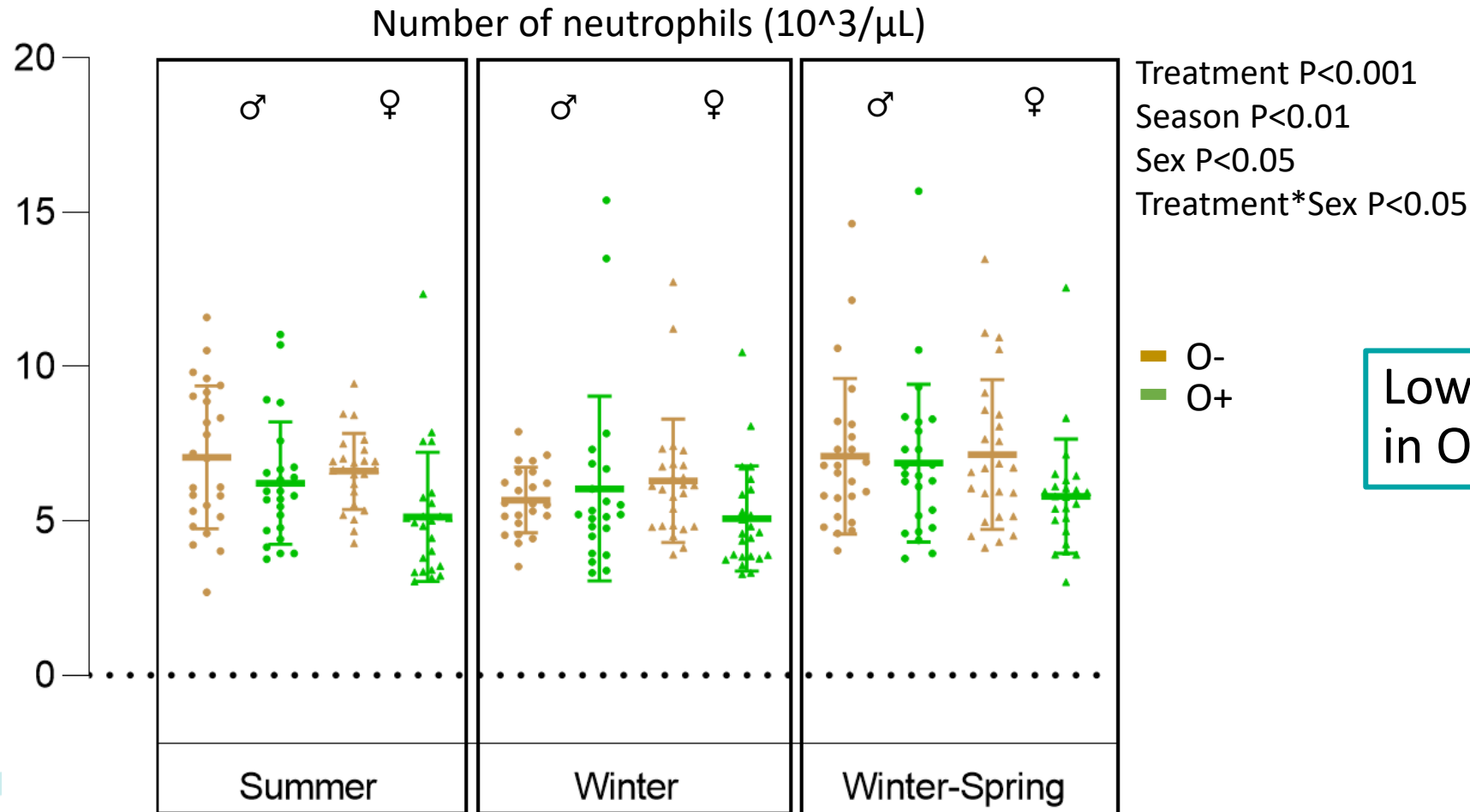
Sex/treatment	♂ O- n=71	♂ O+ n=70	♀ O- n=73	♀ O+ n=72
Lameness	2	8	3	4
Abscess	1		1	1
Bursitis	1			
Hernia	1		1	5
Hemorrhagic diarrhea	2		1	1
Othematoma				1
Intestinal obstruction	1			
Prolapse			1	
Paralysis		1		
Death	1	1		1

No effect of outdoor access on clinical signs & no seizure at slaughter



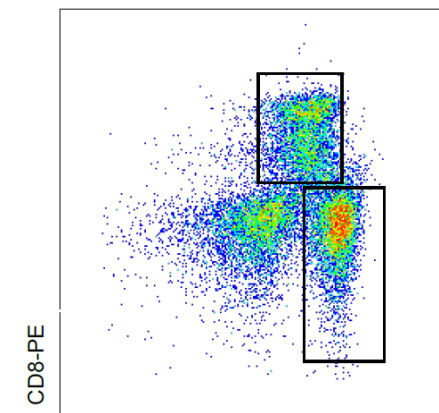
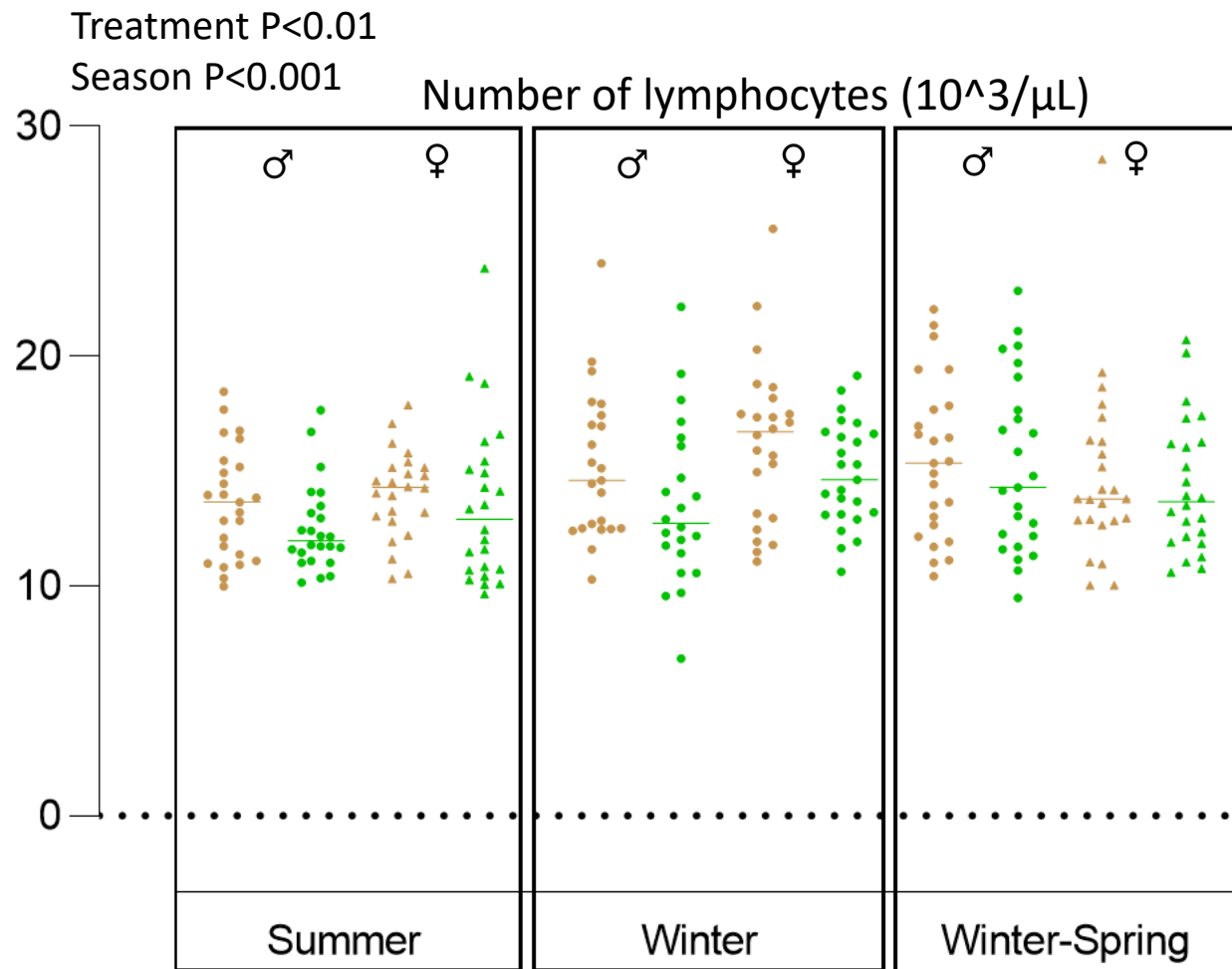
➤ Complete Blood Count (D135)

- Lower white blood cell count in O+ pigs
- No difference in monocyte counts



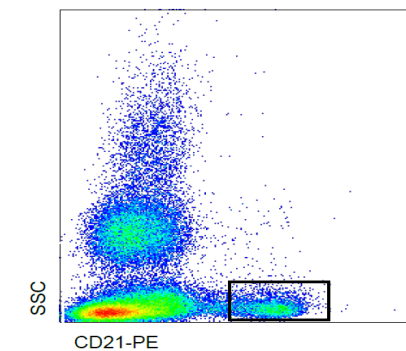
Lower neutrophil count
in O+ vs O- females

➤ Lymphocyte counts (D135)



Cytotoxic T lymphocytes
(CD4- CD3+CD8+)

$\gamma\delta$ T lymphocytes
(CD4- CD3+CD8-)



B lymphocytes
(CD21+)

The decrease in total lymphocytes is linked to the decrease in CD8, $\gamma\delta$ lymphocytes & B lymphocytes in O+ pigs, but is not linked to CD4

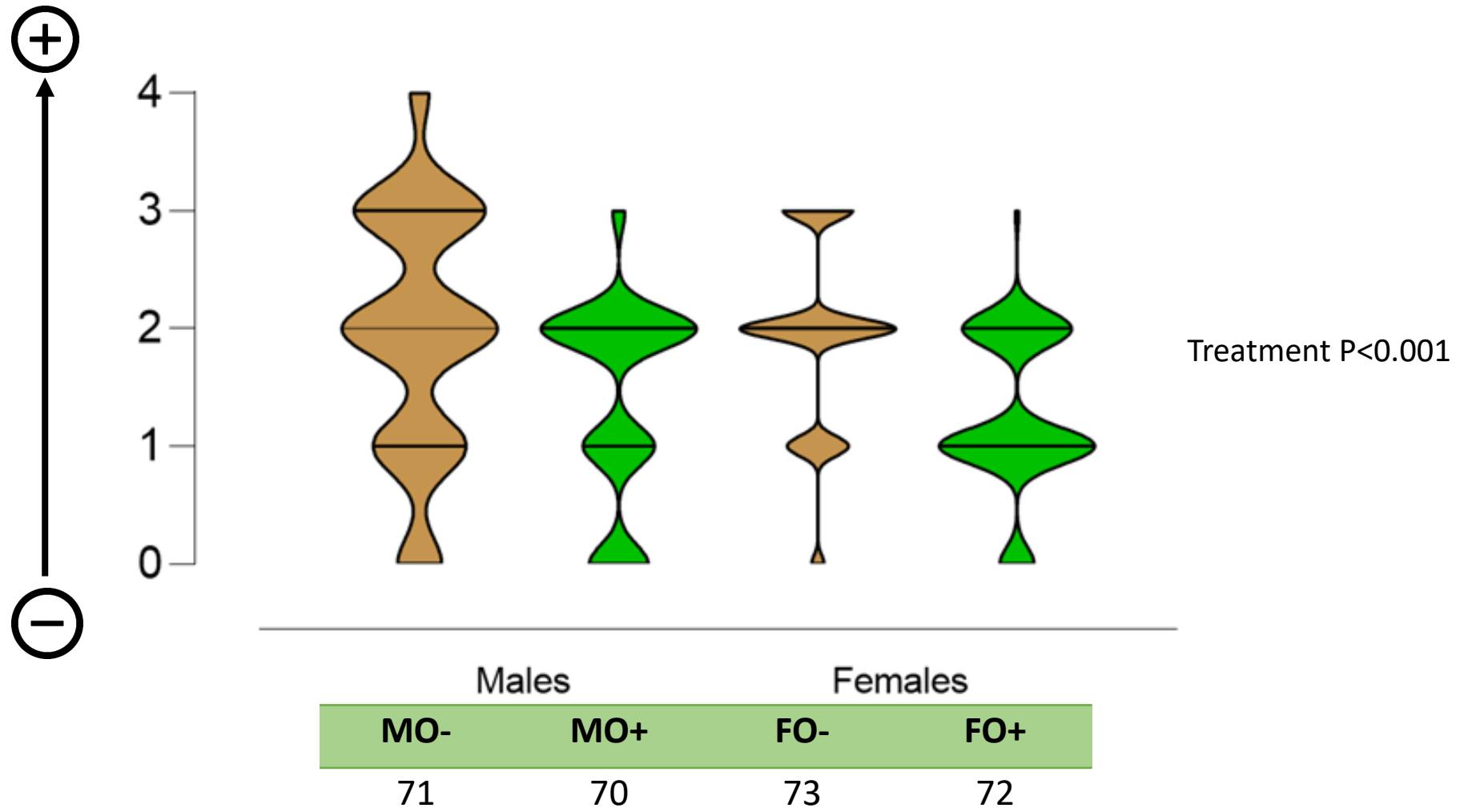
Outdoor access reduces stimulation of immune cells

➤ Immune Competence (D135)

No effect of outdoor access on:

- Phagocytic capacity of mononuclear and polynuclear cells
- Ability of blood cells to secrete IL-8 & TNF α in response to LPS stimulation
- The level of secretory IgA in saliva

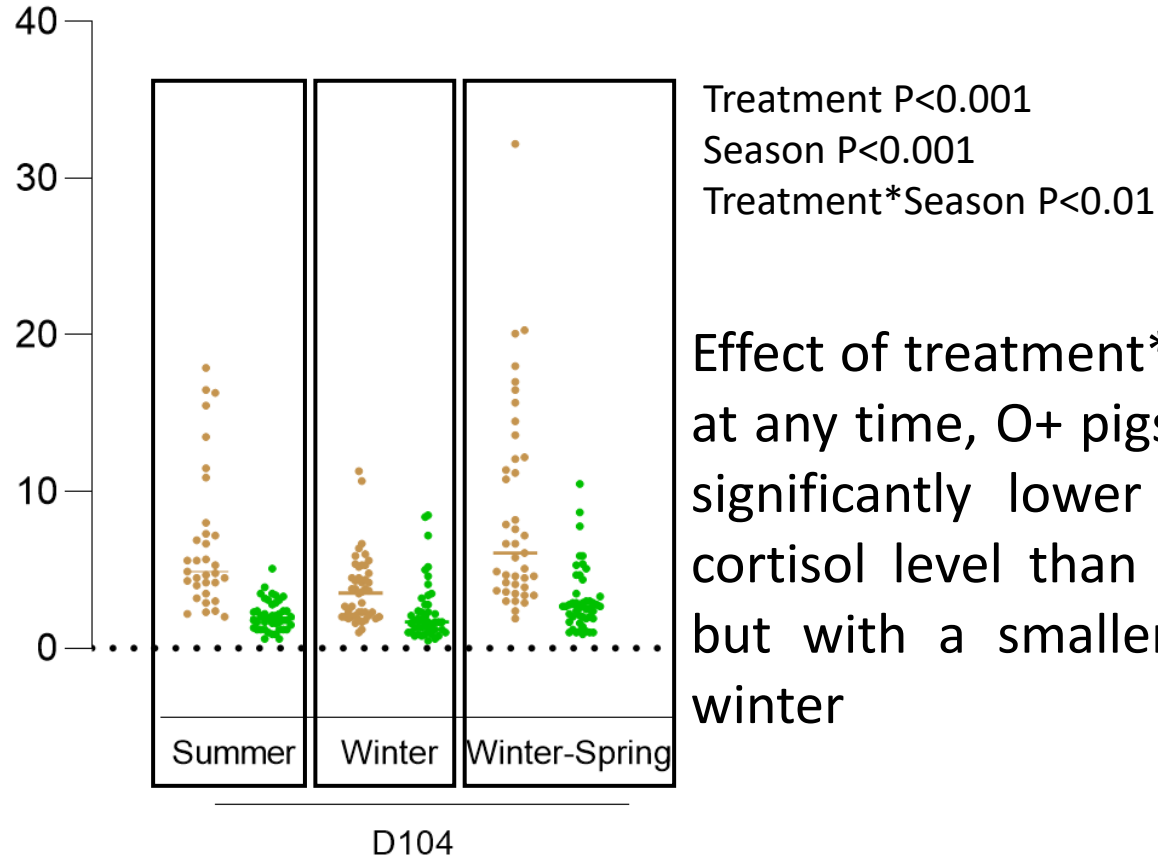
➤ Body injury scores



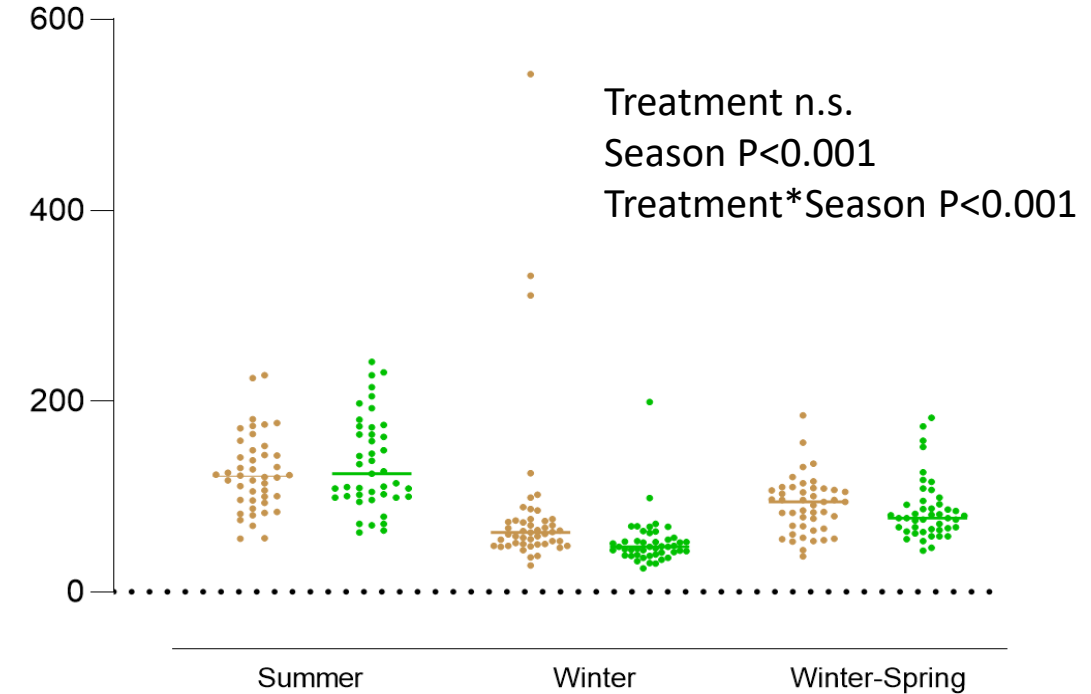
At the end of the fattening phase, O+ pigs showed significantly less severe body injuries than O- pigs did

➤ Salivary & hair cortisol

Salivary cortisol D104 & D150 (ng/ml)



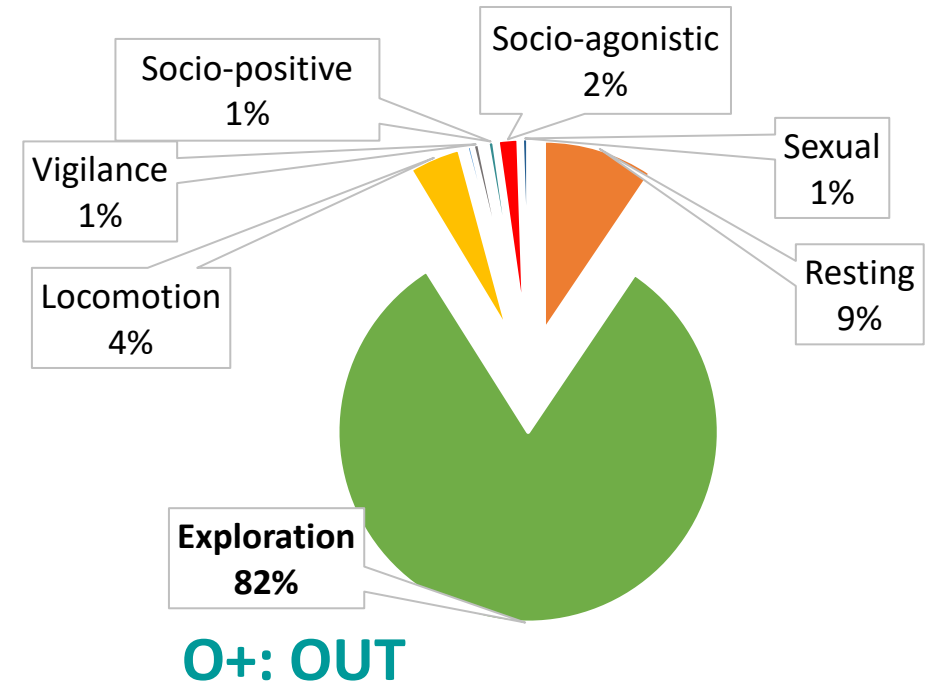
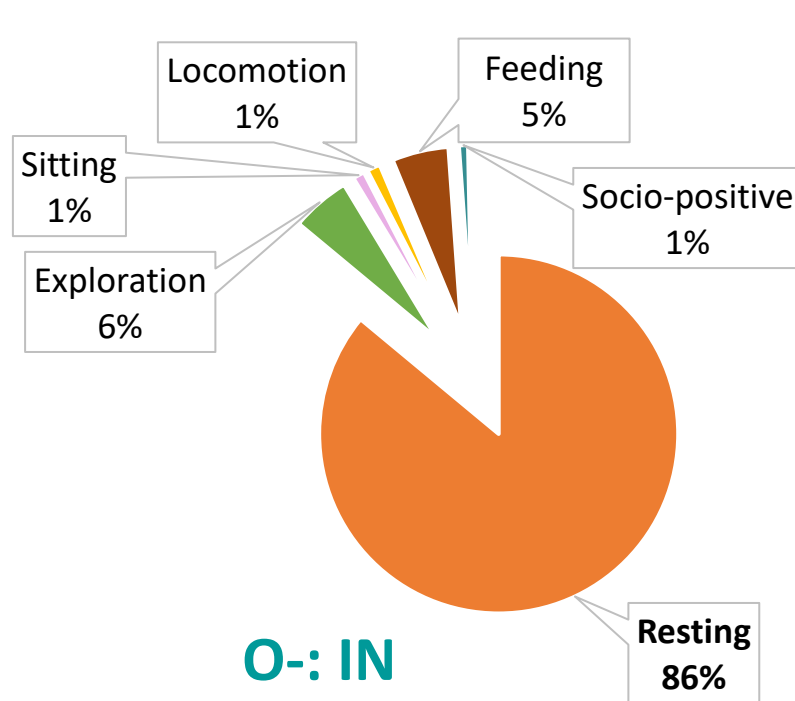
Hair cortisol D150 (ng/ml)



Effect of treatment*season ($P < 0.001$): pigs display similar hair cortisol levels, except during winter

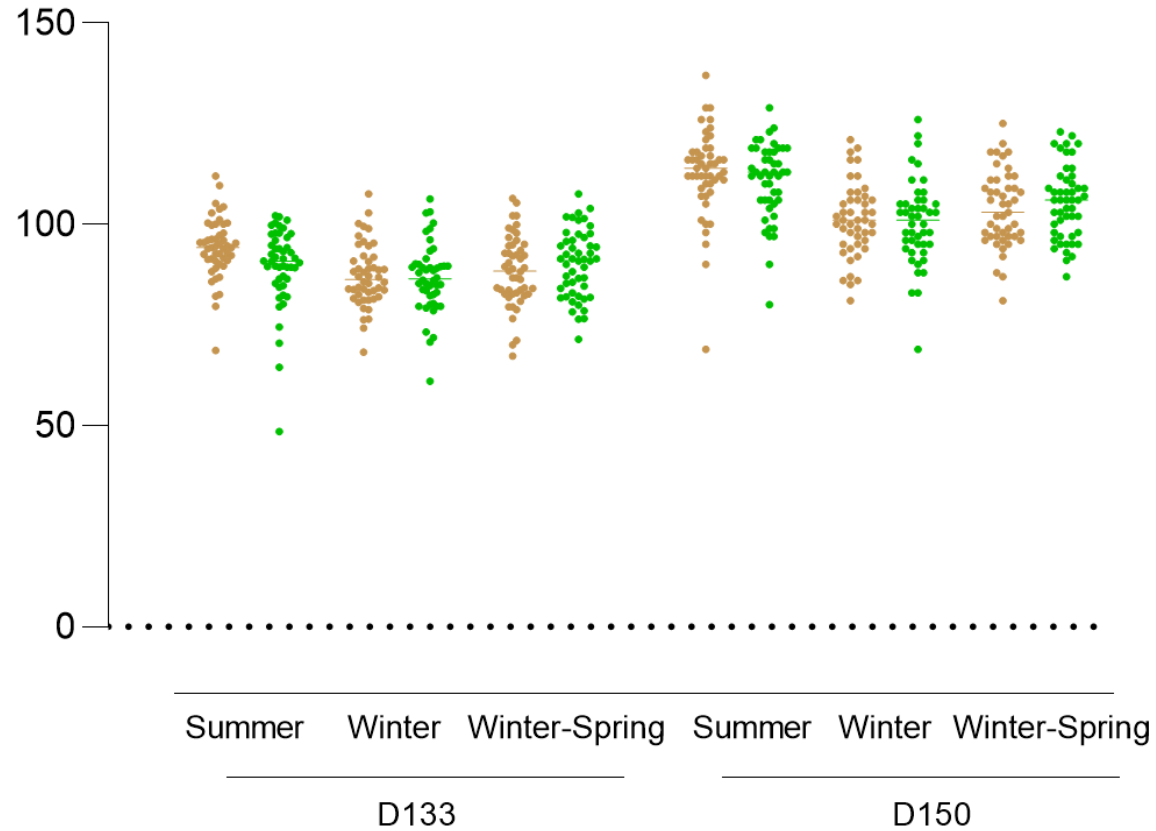
➤ Behaviour measures

Time budget during mornings (D150)



When O+ pigs are out, they are more active than O- pigs and express a more different repertoire. Outdoor access has a positive effect on pig behaviour.

➤ Growth measures



Individual consumption index (Kg) start – end

Season	O- ♂	O+ ♂	O- ♀	O+ ♀
Summer	224.5	218.7	229.3	224.7
Winter	242.8	258.3	244.9	256.3
Winter-Spring	259.4	258.4	278.9	263.7

Both groups exhibited similar growth performance until slaughter and O+ pigs do not consume more feed

➤ Conclusion

All the data show that giving fattening pigs temporary access to the outdoors could be a valid option for farmers, since it has a positive impact on their health and welfare, without affecting their performance. Finally, we can ask what effect outdoor access has on the emotional state of the pigs.



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Thank you for your attention!!



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➤ Health measures

Body injury scores (D150)

Score	0	1	2	3	4
Description of the lesions	No lesion	One small (= 2cm), superficial lesion	More than one score 1 lesion or a single red lesion (deeper than score 1) always superficial	One or more extensive (2 to 5 cm) and deep lesion(s)	One very large (>5cm), deep and red lesion or many score 3 lesions

Table 1. Bodily injury score (Gavaud *et al.*, 2023).

> Pasture

Start June 2023



End April 2024

