Ramps in aviaries reduce falls and fractured keel bones in commercial laying hens

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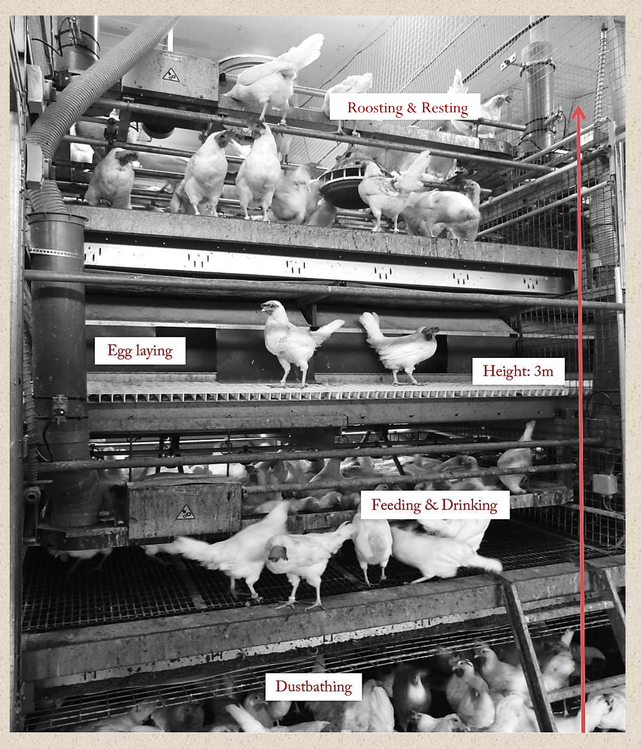
OBJECTIVE

The prevalence of keel bone fractures is high in aviary systems. Potential causes are falls and collisions that occur as birds move between the tiers and perches. We investigated whether the **addition of ramps between tiers in an aviary system affects incidence of falls and collisions and consequently the prevalence of keel bone fractures in laying hens.**

METHODS

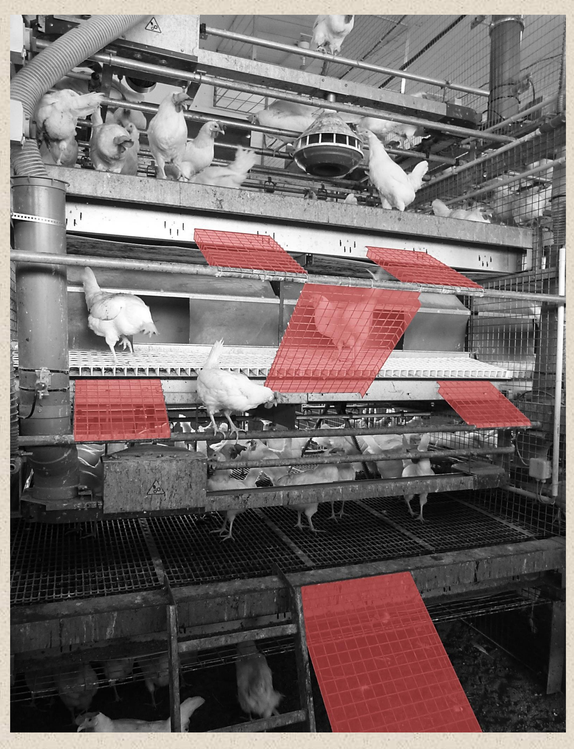
- Hen house with 20 pens with 4 different designs: **focus on control vs. ramp design only**
- Video recordings at 19, 22, 29, 36 and 43 weeks of age and analysis of 10 last minutes of dusk and first 10 minutes of subsequent dark phase
- Number of planned movements, falls and collisions were assessed
- Keel bone palpation of 20 focal hens per pen at 18, 20, 23, 30, 37, 44, 52 and 60 weeks of age

Control design



5 pens with 225 LSL hens

Ramp design



5 pens with 225 LSL hens

RESULTS

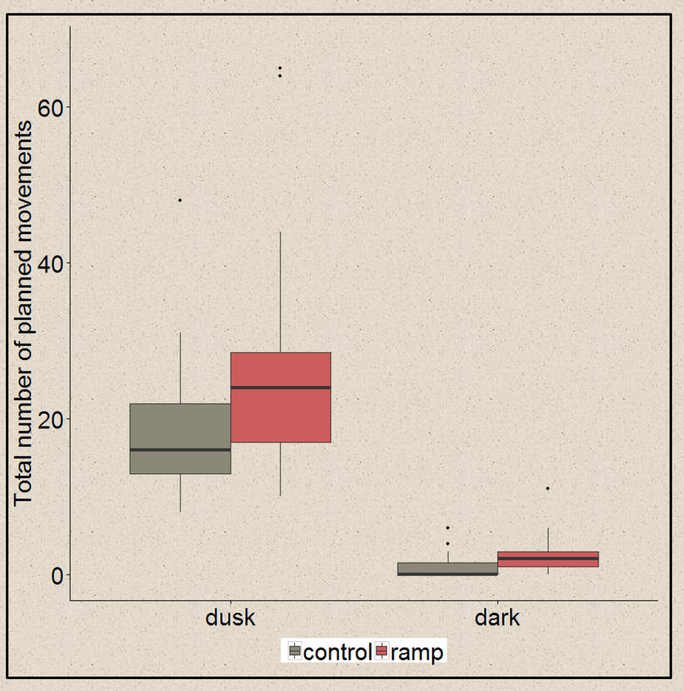


Fig. 1: Total number of planned movements separated for treatment group and light phase. GLMM, control vs. ramp design: **Z = 2.45, *P* = 0.014**.

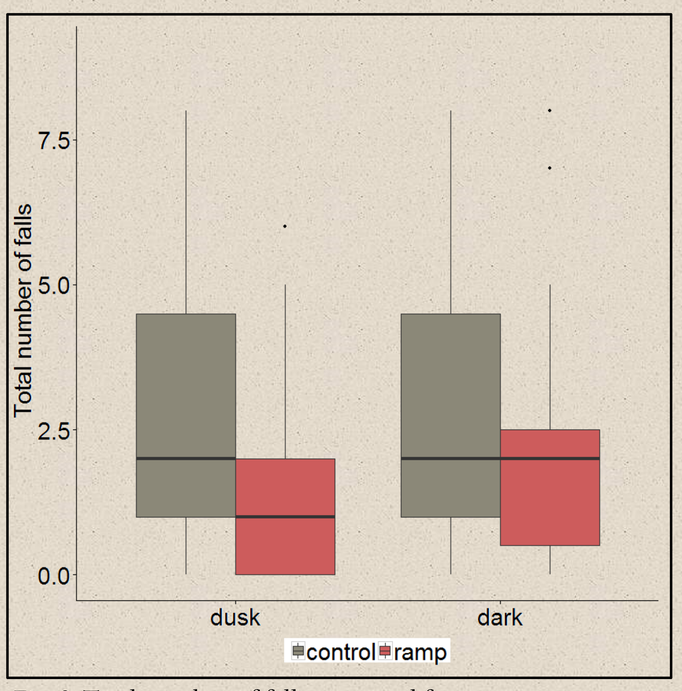


Fig. 2: Total number of falls separated for treatment group and light phase. GLMM, control vs. ramp design: **Z = -2.77, *P* = 0.006**.

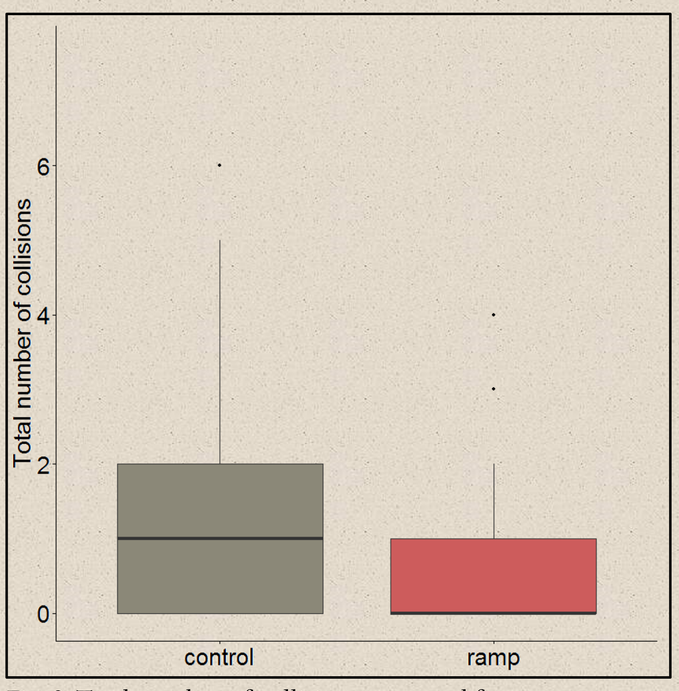


Fig. 3: Total number of collisions separated for treatment group. GLMM, control vs. ramp design: **Z = - 4.93, *P* < 0.0001**.

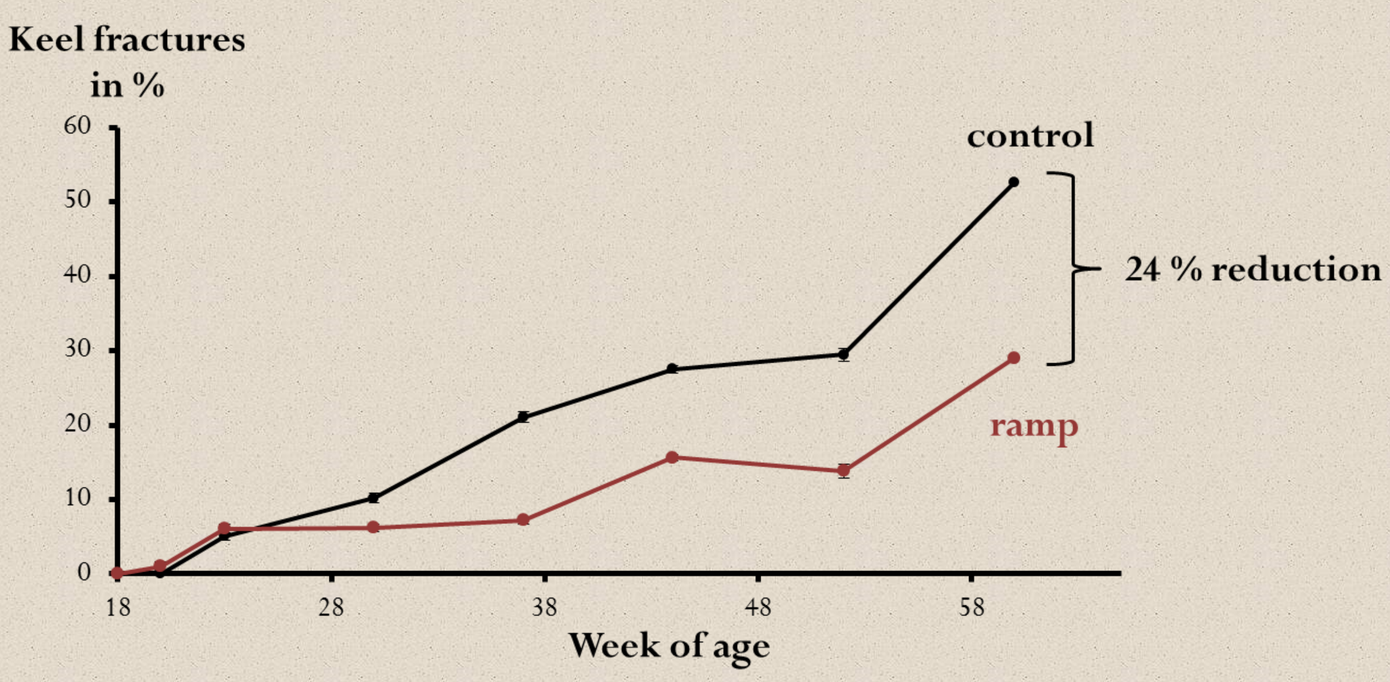


Fig. 4: Percentage of keel bone fractures over the entire laying cycle. GLMM, control vs. ramp design: **Z = -2.84, *P* = 0.0046**

CONCLUSION

Compared with the control design, ramps increased:

- ➡ **Planned movements by 44 %**

ramps reduced:

- ➡ **Falls by 55 %**
- ➡ **Collisions by 41 %**
- ➡ **Keel bone fractures by 24 %**

We suggest that ramps support natural moving behaviour of laying hens and are a promising tool to reduce keel bone damage of laying hens in aviary systems.