Age at castration:
currently up to 7 days without pain relief

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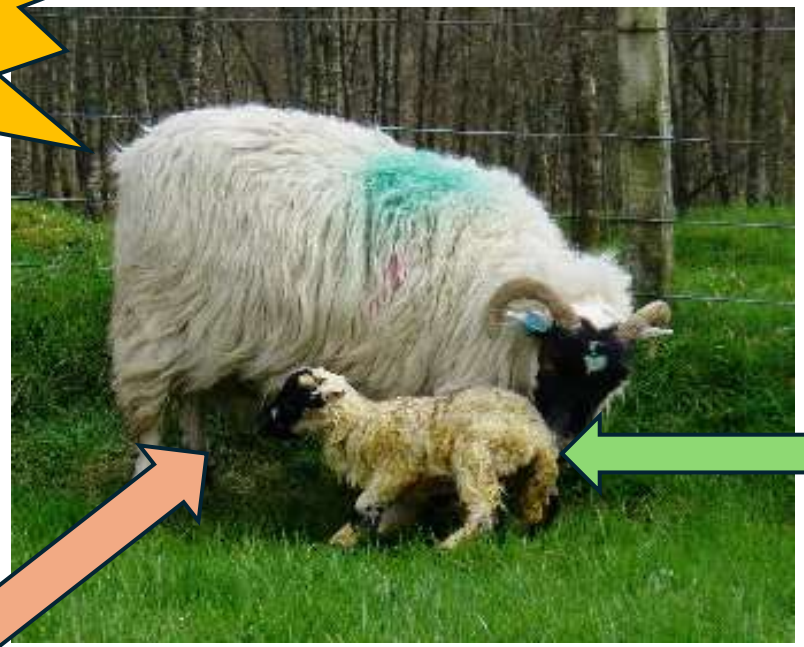
- No evidence that younger animals do not feel pain
- Substantial evidence that inflammatory injuries, when experienced in early life, disrupt physiological and neurological development
- Leads to increased pain sensitivity, fear, anxiety, and impacts reproductive development (persist into adulthood)
  - Greater pain responses at 1 day than at 10 days in tail docked lambs
  - Evidence that tail-docked ewes have slower parturition and needed more assistance than ewes with a full tail
- Younger animals heal faster, smaller volume of tissue, but have greater inflammation and pain sensitivity

Neonatal lambs

50% of preweaning mortality is on the day of birth



Maintaining sucking interactions

- Survive the transition from foetus to neonatal lamb
- Hypoxia and birth trauma
- Onset of breathing
- Begin thermoregulation
- Stand and find the udder
- Suckle colostrum
- Recognise the ewe
- Stay with her and follow her

Pain at castration and tail-docking

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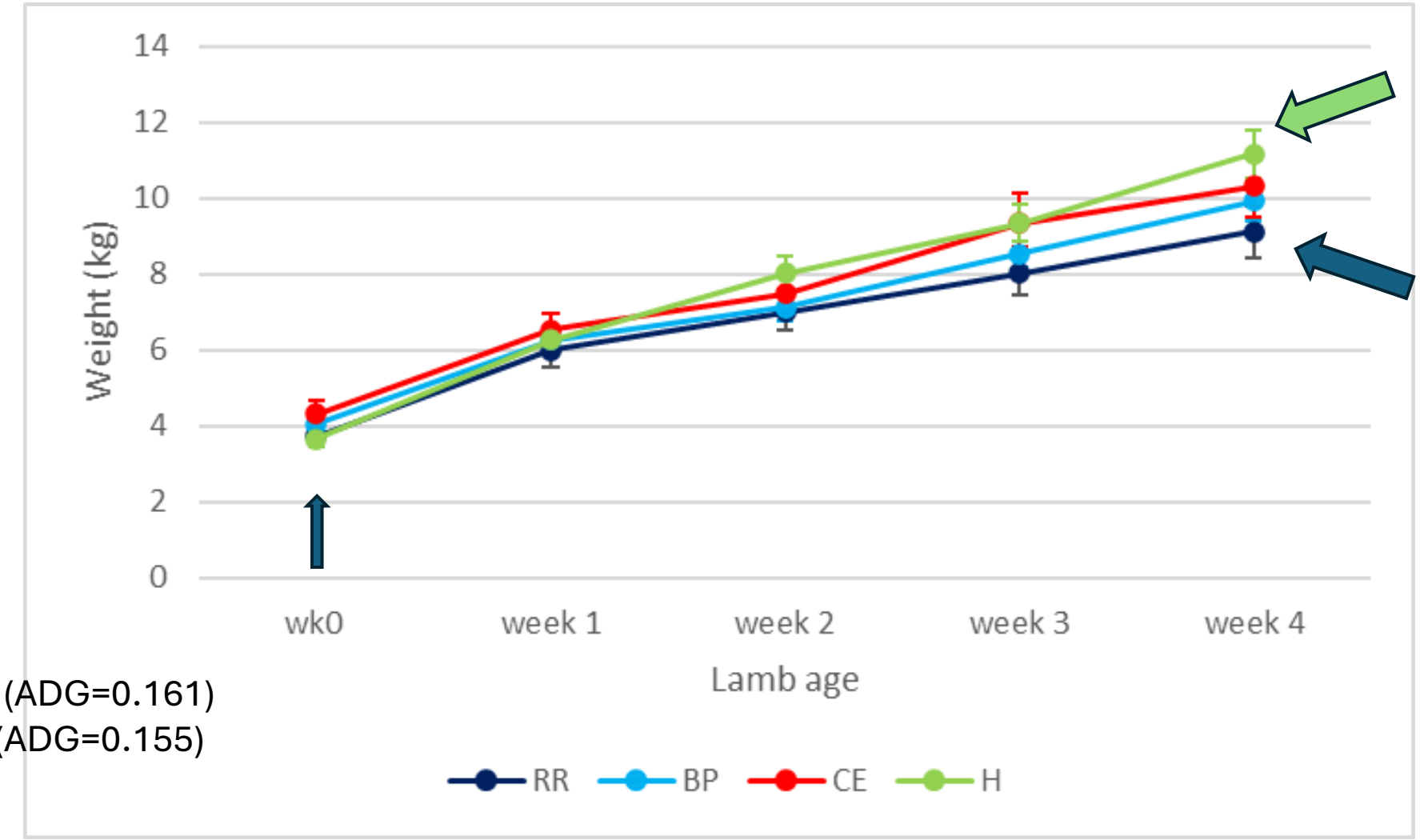
- 30 years of research, many countries, breeds and castration methods, 1000s of lambs, agree that castration and tail-docking are painful [967 papers in 2021]
  - Marked changes in physiological responses (elevated cortisol, catecholamines, heart rates etc) for 4 hours
  - Marked changes in acute behaviour lasting up to 2-4 hours, behavioural changes apparent 2-4 weeks after castration
  - Changes in EEG in castrated lambs compared to handled only
  - Presence of inflammatory lesions for up to 28 days
  - Evidence of neuropathic pain more than 2 days after procedure

Pain impacts on growth rate



At slaughter:
Entire: 45.21 kg (ADG=0.161)
RR-cast: 42.38 (ADG=0.155)

Rubber ring castration

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ClipFitter castration

Methods to reduce pain at castration and tail-docking

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- Smaller and tighter rubber rings (2010)
- Immunocastration (Zoetis product, anti-GnRH) (2016)
- **ClipFitter**
- **Numnuts**
- Lidocaine impregnated rings (paper in 2014 suggesting some reduction but not to the level seen by other means of giving pain relief)

ClipFitter – pain responses (<7 d lambs)

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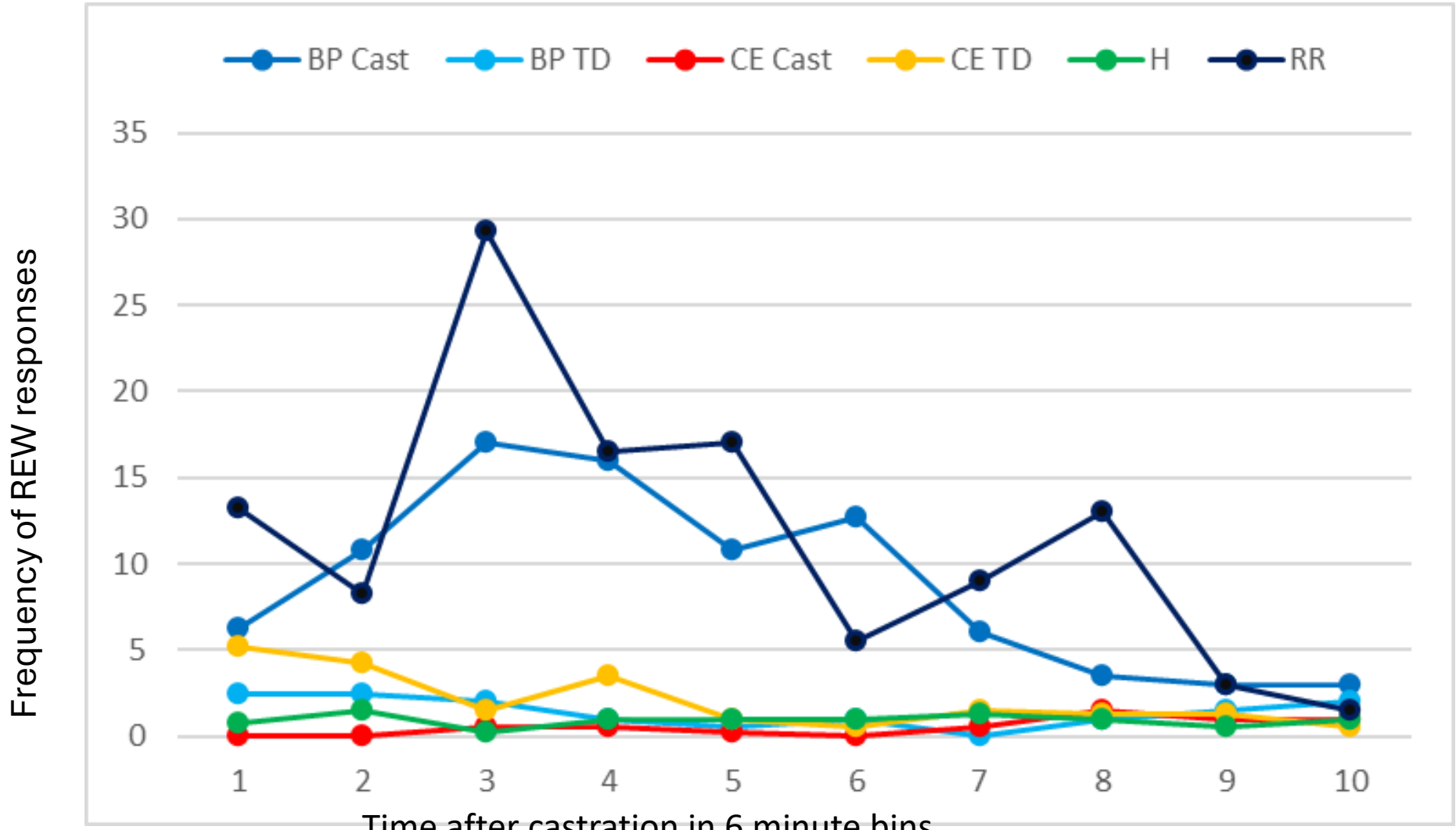

ClipFitter – pain responses (4-6 wk lambs)

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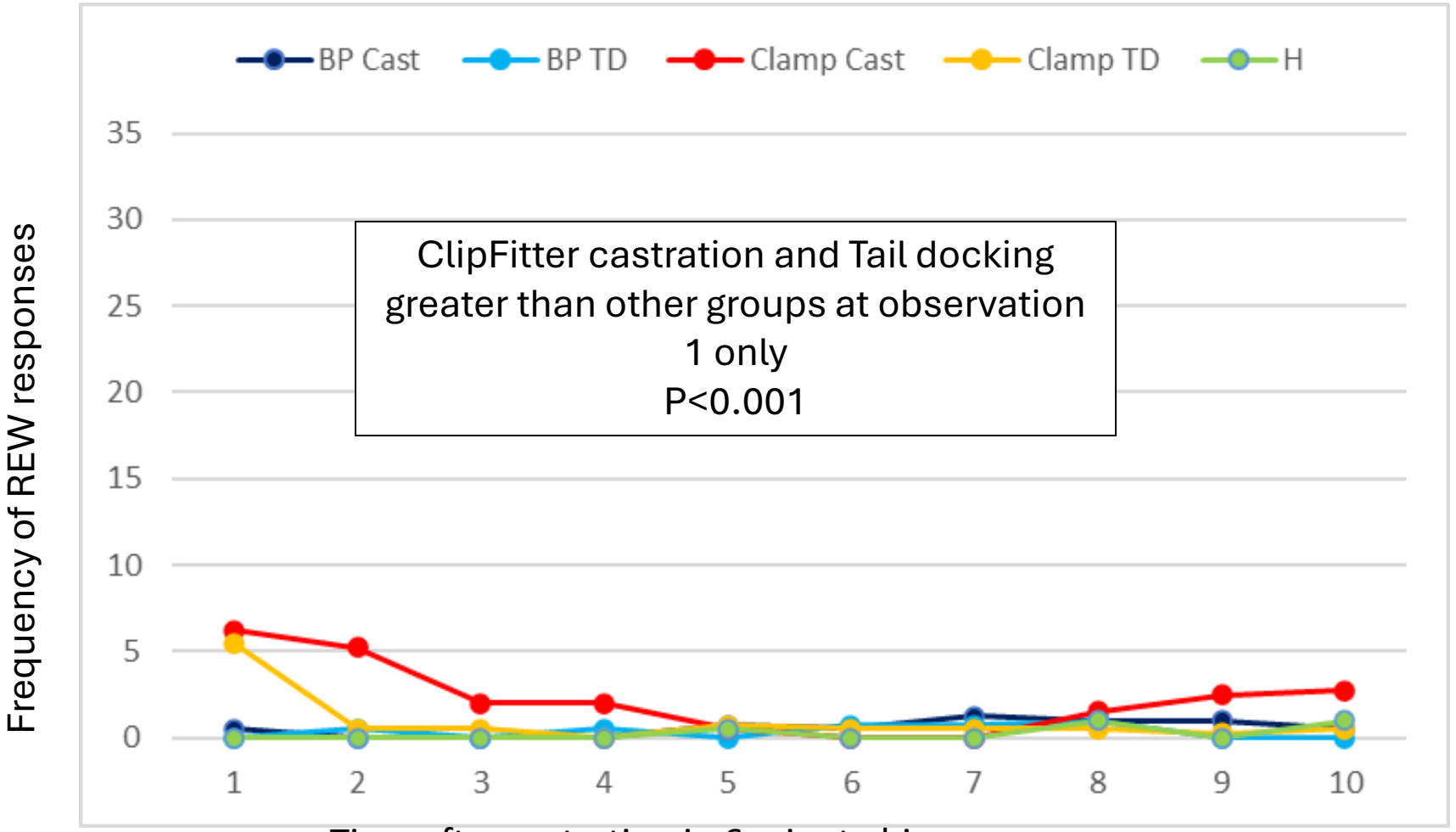

Pain behaviours, 60 minutes

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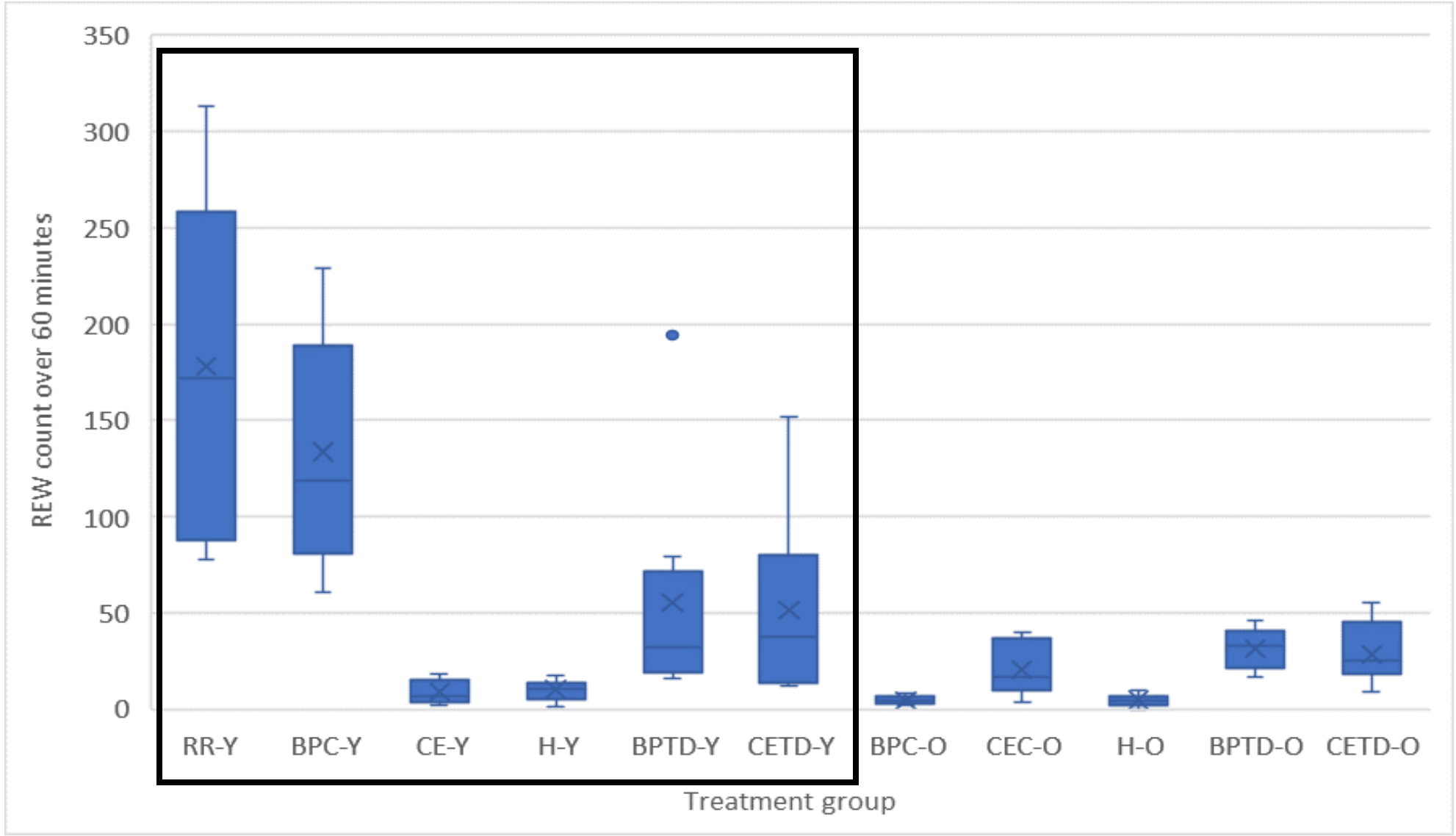
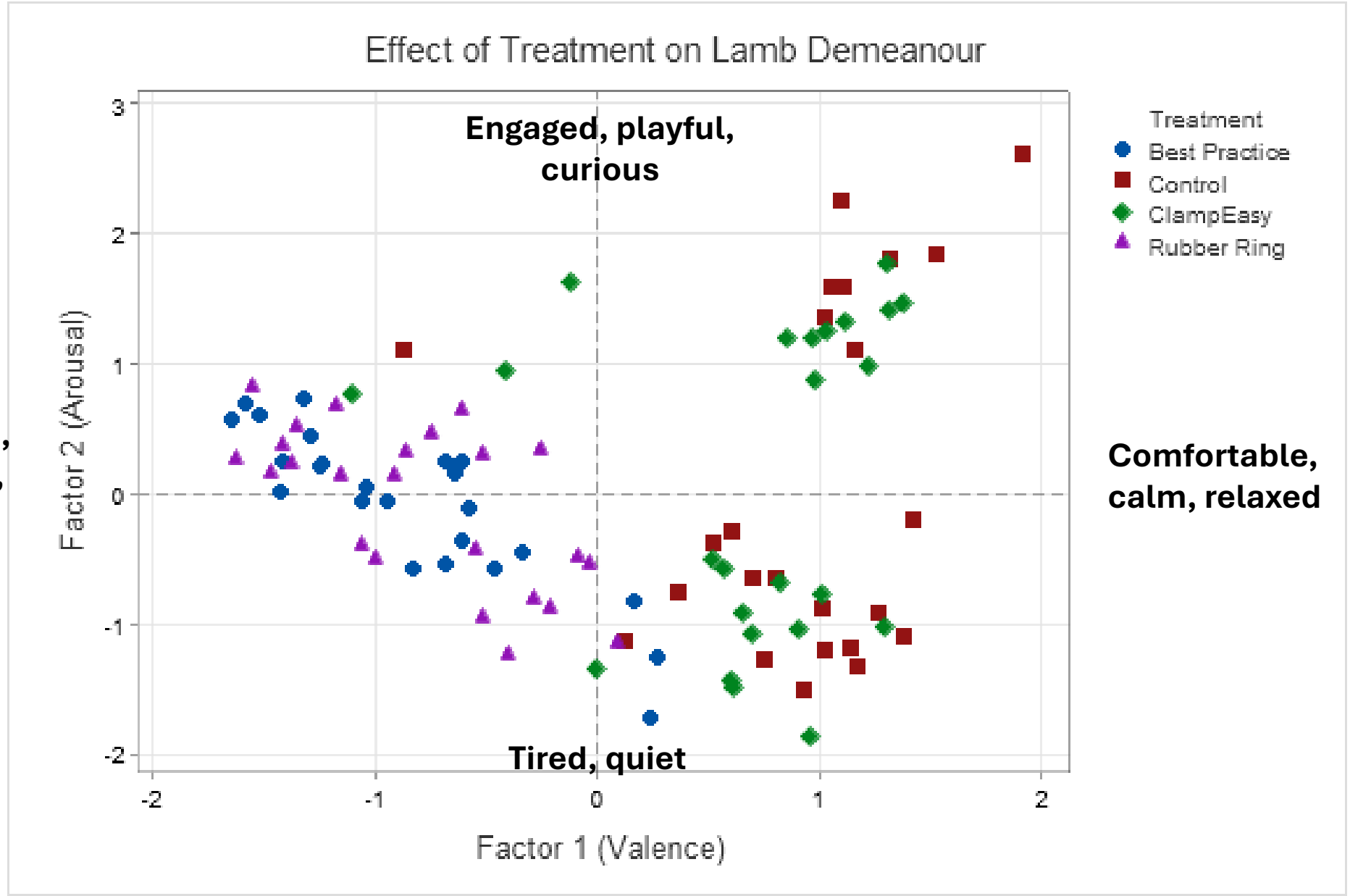


QBA Castration – younger lambs



Numnuts and tail-docking

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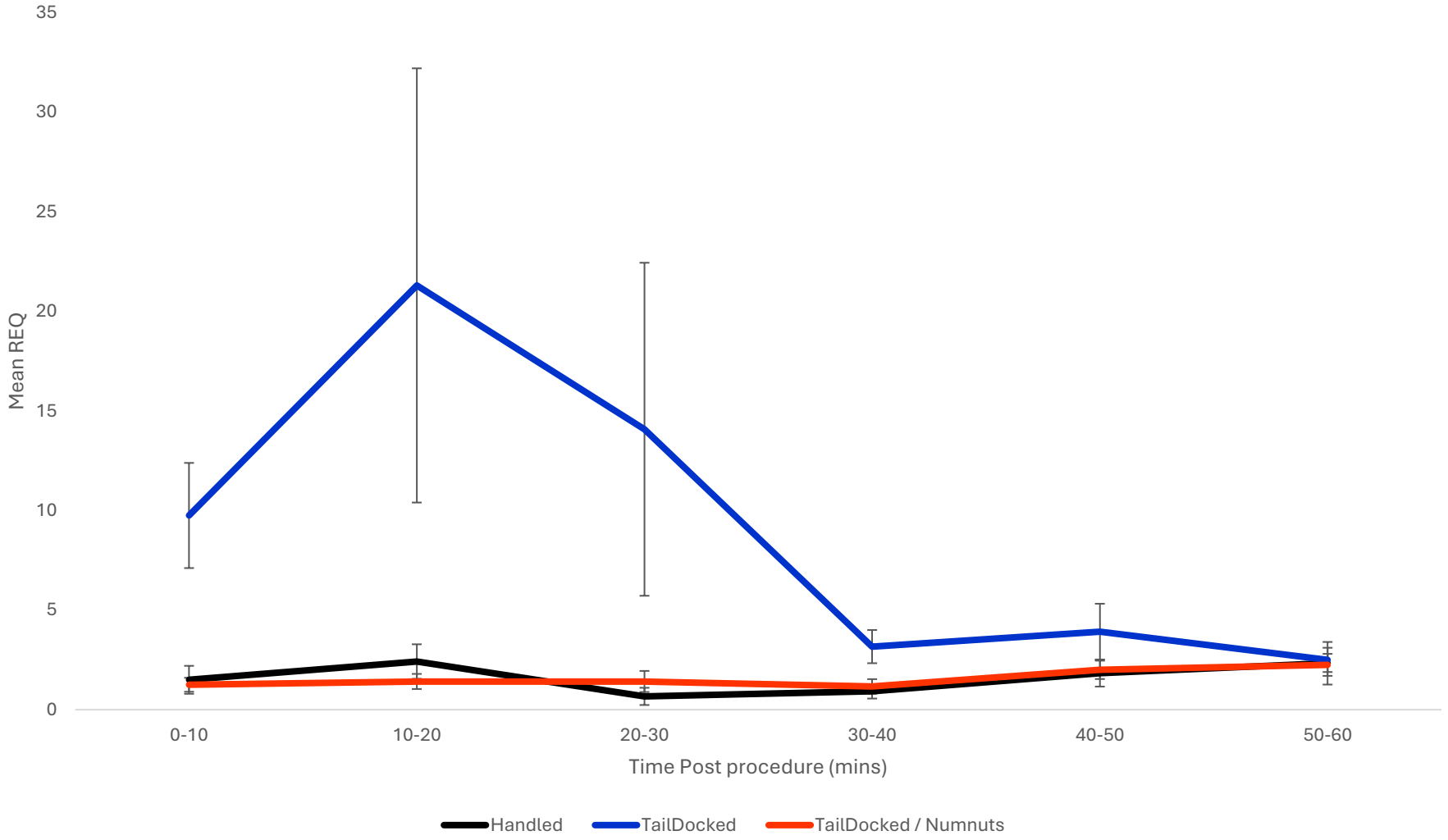

Numnuts and castration

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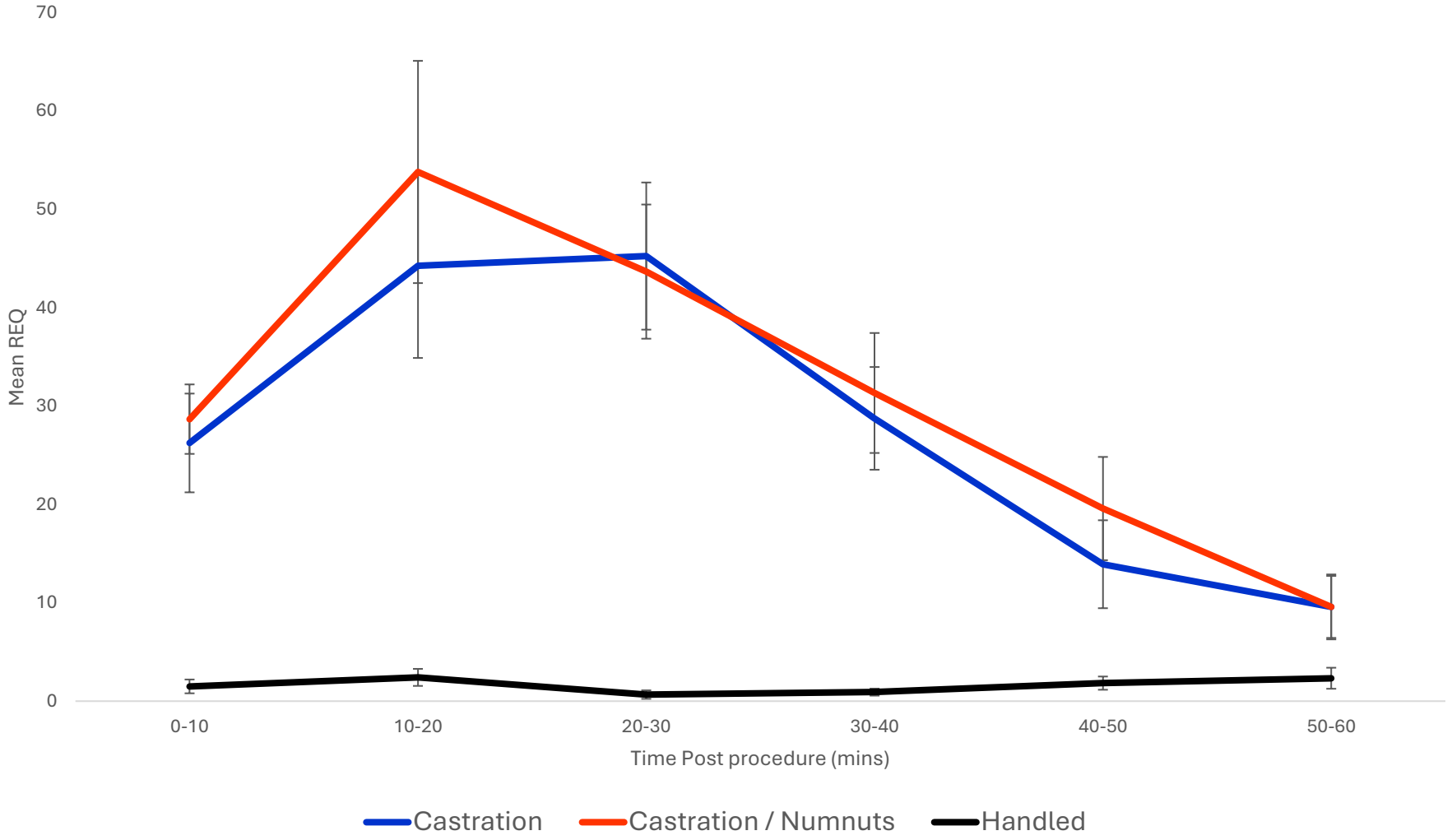

Take home messages from scientific evidence

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- Current methods of tail-docking and castration cause sustained responses in lambs that are consistent with this being painful
- This can affect growth over next 4 weeks suggesting it impacts on the lamb
- Younger lambs are not less likely to experience pain and it may be more detrimental to their growth and development than in older lambs
- ClipFitter can mitigate the pain associated with castration and tail docking
- Numnuts can mitigate the pain associated with tail docking but is less effective with castration

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