

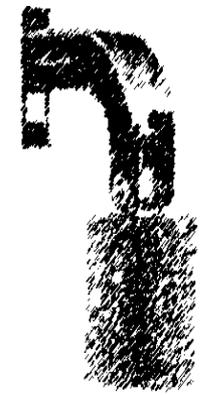
# **A sequential analysis of body regions and body positions during mechanical brush use by dairy cattle**

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- Mechanical brushes are becoming very common in dairy farms all over the world. Brush allows cows to groom themselves in places that are difficult to groom.
  - Grooming is generally assumed to be positive, but it has also been shown to increase, especially at stressful times.
  - Some studies have shown a preference for brushing head and neck; whereas other studies have shown a preference for the hindquarters, none of them have explored how is the dynamic and sequence of brush use in a single bout
  - Because body postures have been suggested as indicators of emotional states (already used in humans) assessing body posture while brushing could provide information on how cows experience the brushes



**The aim of this study was to evaluate cow's body postures associated with brushing the different body regions with a view to investigating how they might experience grooming by mechanical brushes**

## ***Animals and housing***

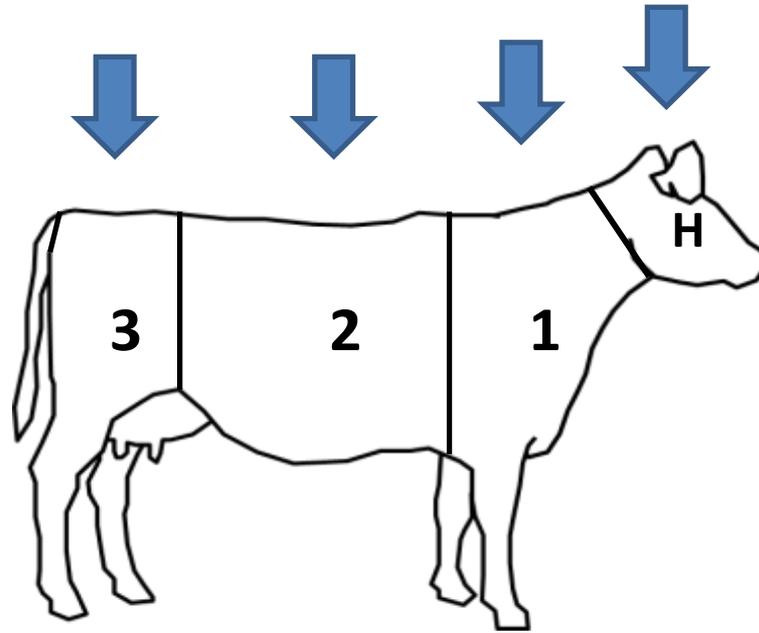
- Swedish Livestock Research Centre- Lövsta, Uppsala
- 72 cows -Holstein (32%) and Swedish Red (68%)
- Loose housing system /voluntary milking system AMS
- 9 week period

## ***Behaviour observations***

- 20 experimental days
- 10 scans throughout the day / 30 min of continuous observation
  - Body posture registered every 15 seconds

**Continuous observations**

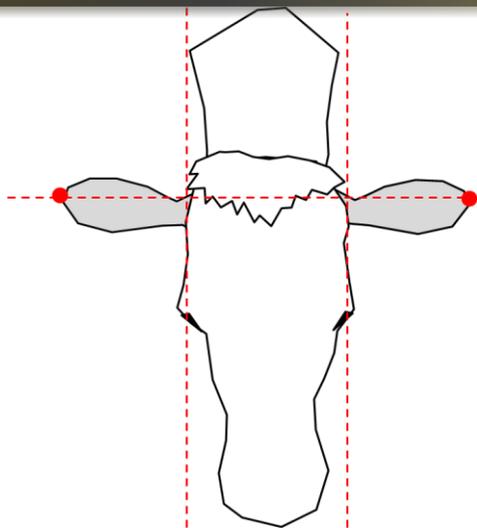
- Body region
- Body postures



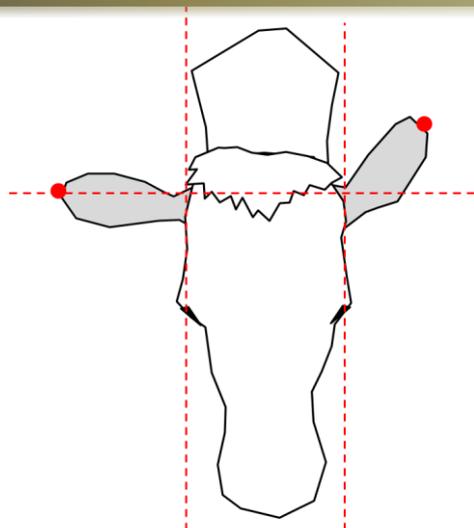
Every 15 seconds



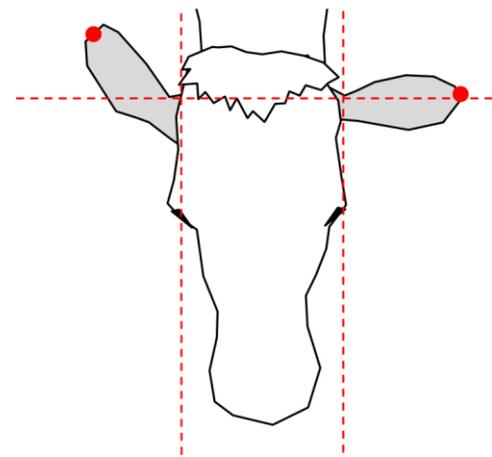
# Ear posture



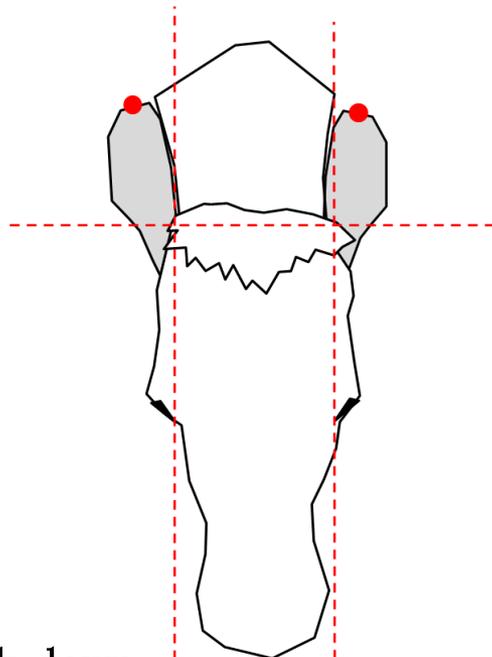
Axial



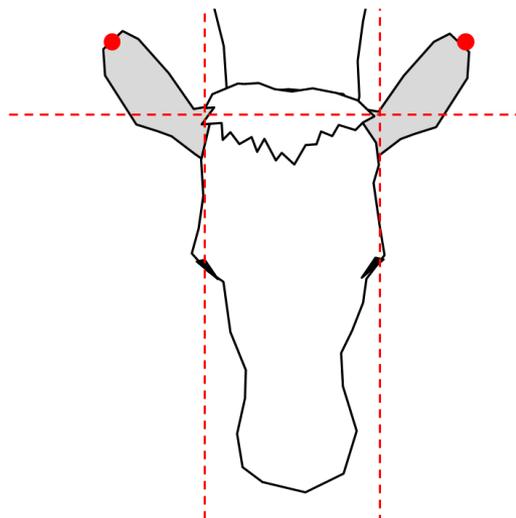
Asym left



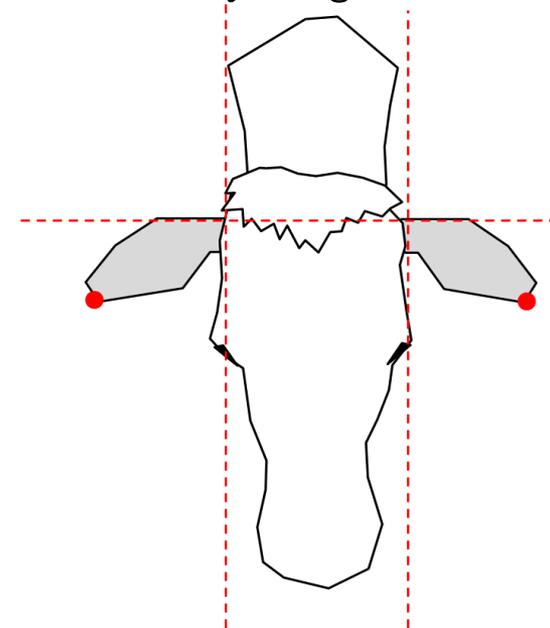
Asym right



Back down

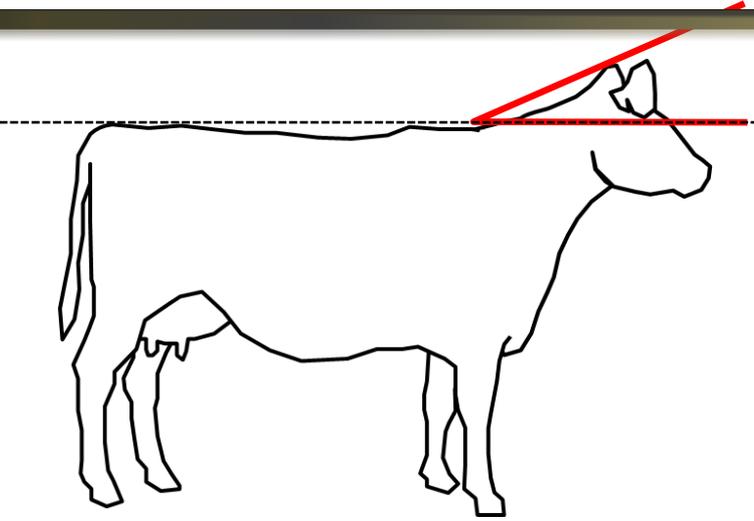


Back up

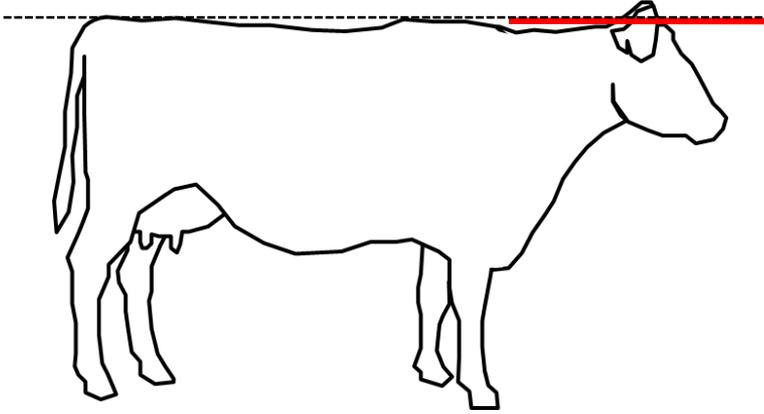


Forward

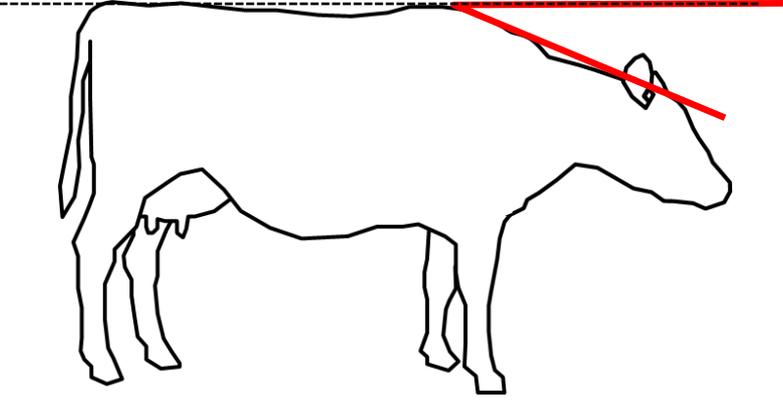
# Neck posture



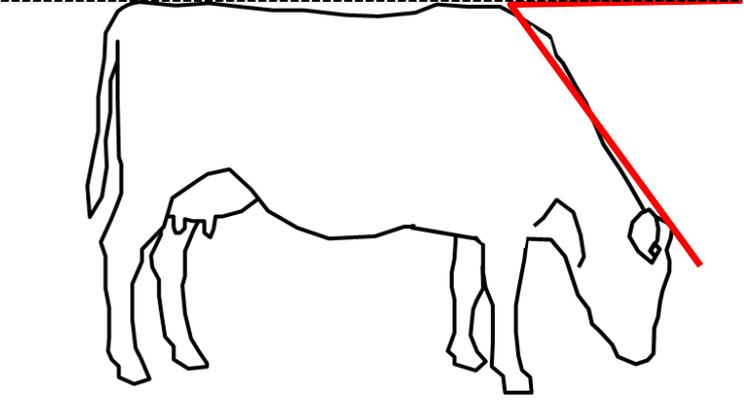
ABOVE HORIZONTAL



HORIZONTAL

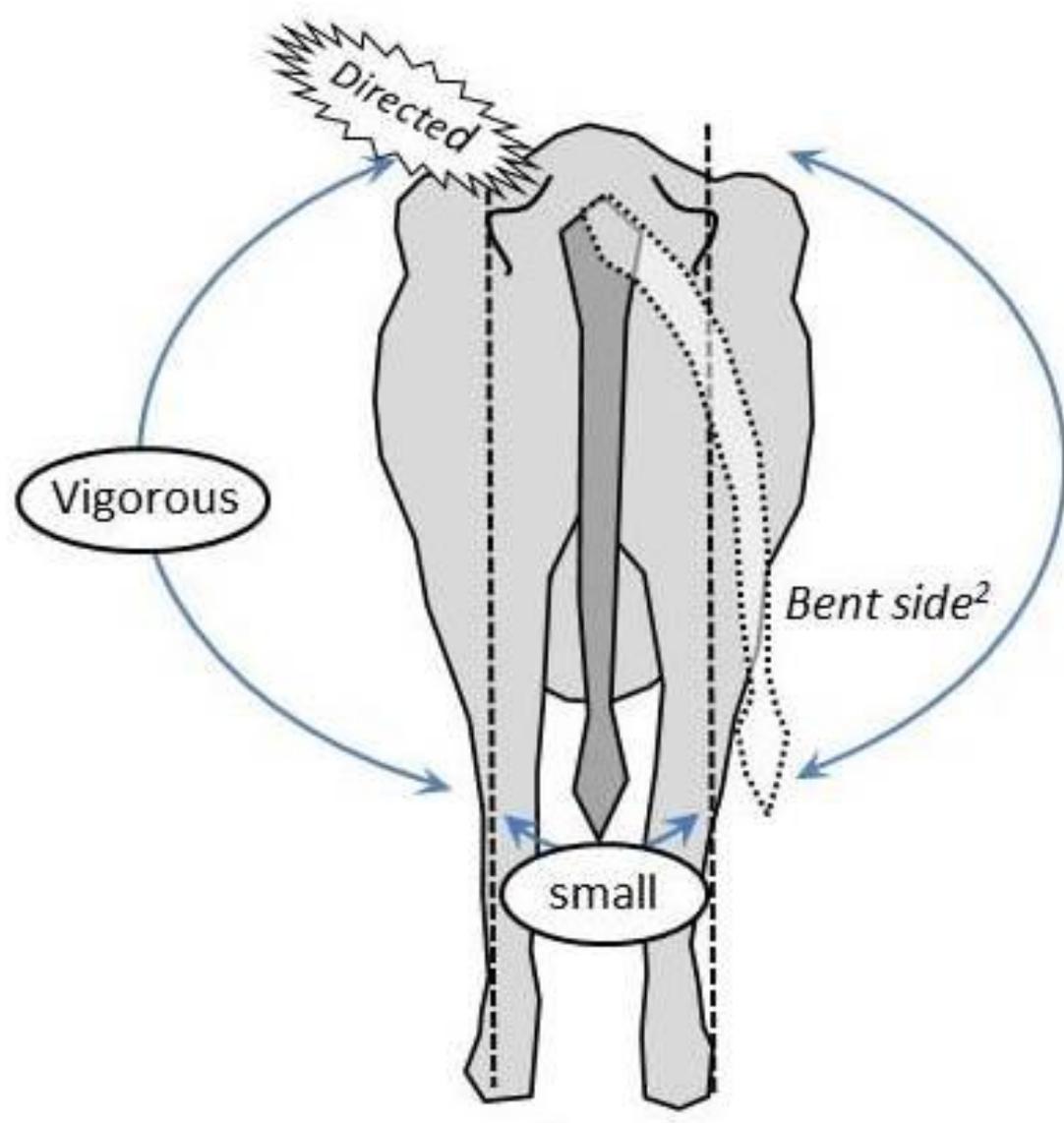


BELOW HORIZONTAL

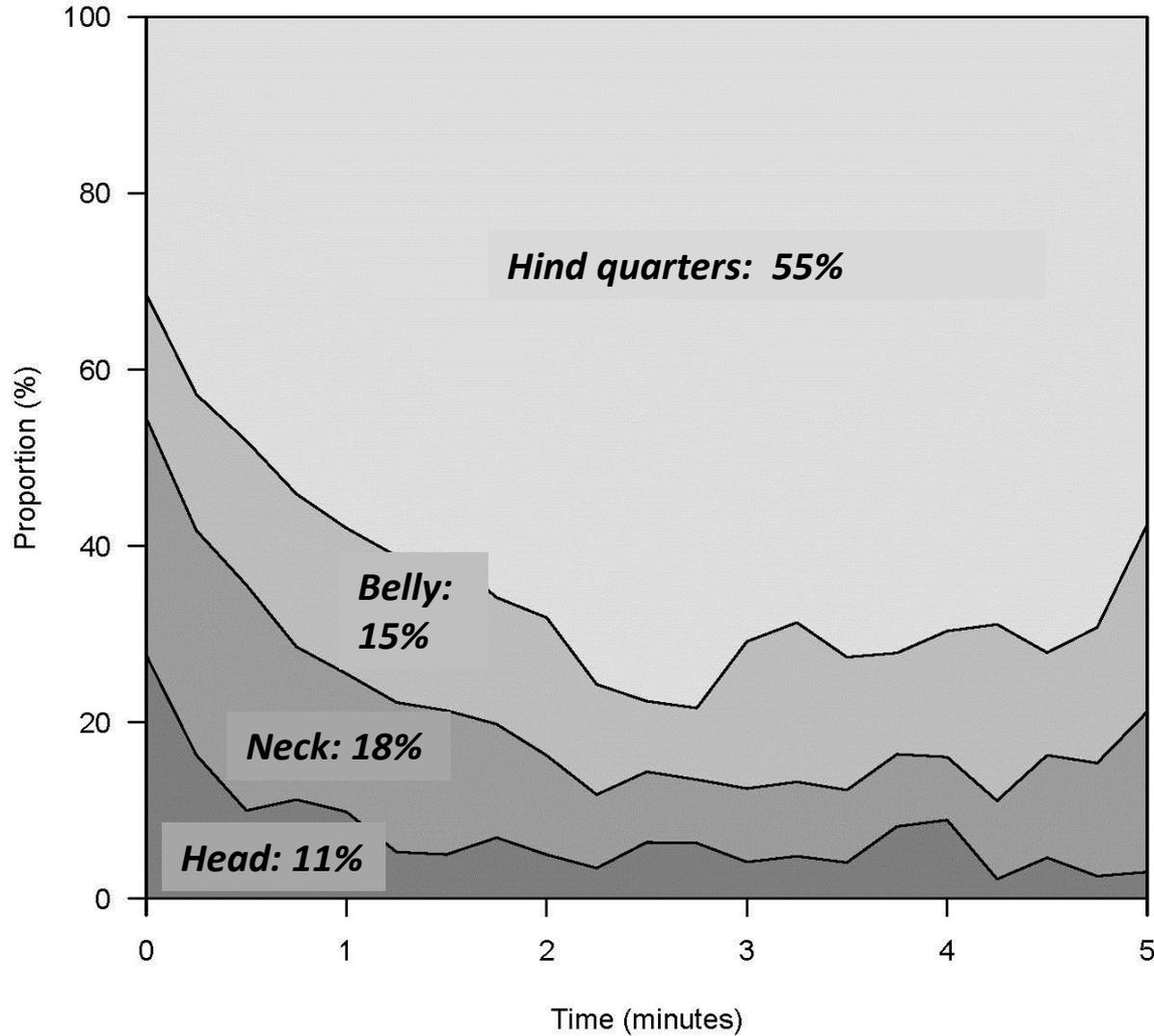


DOWN

# Tail posture



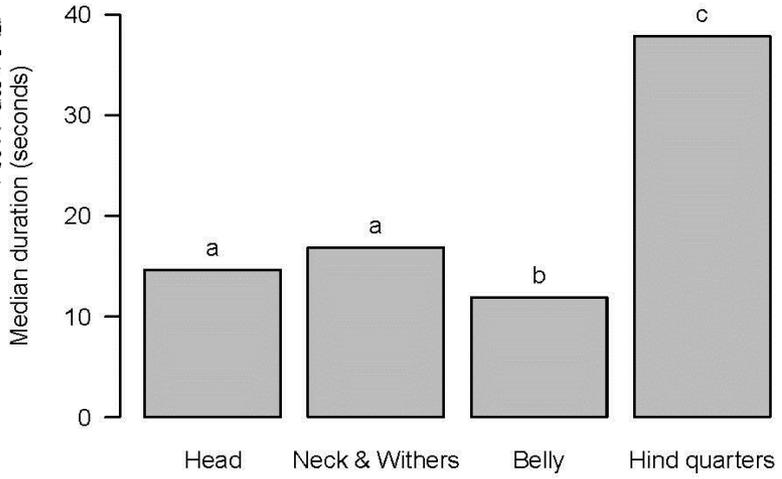
Body region (% time) over time while brushing



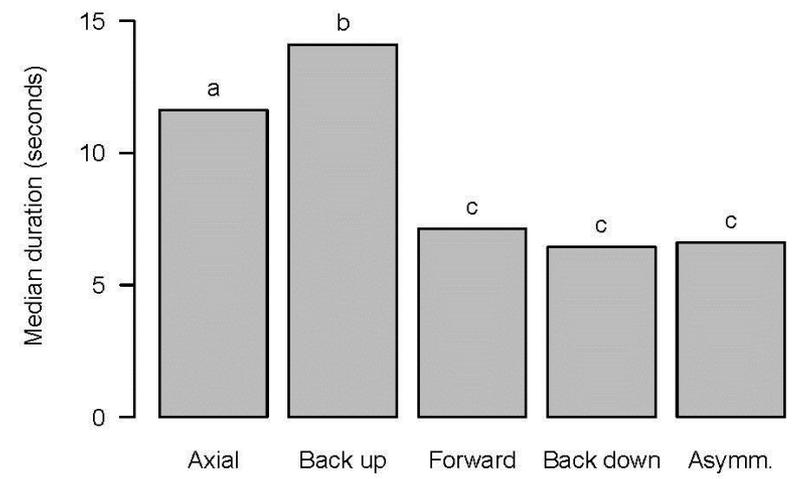
# Median duration while brushing



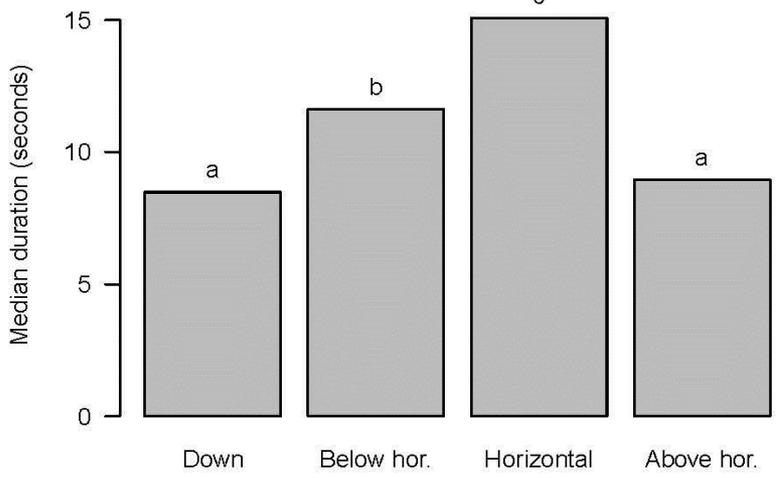
### Body region



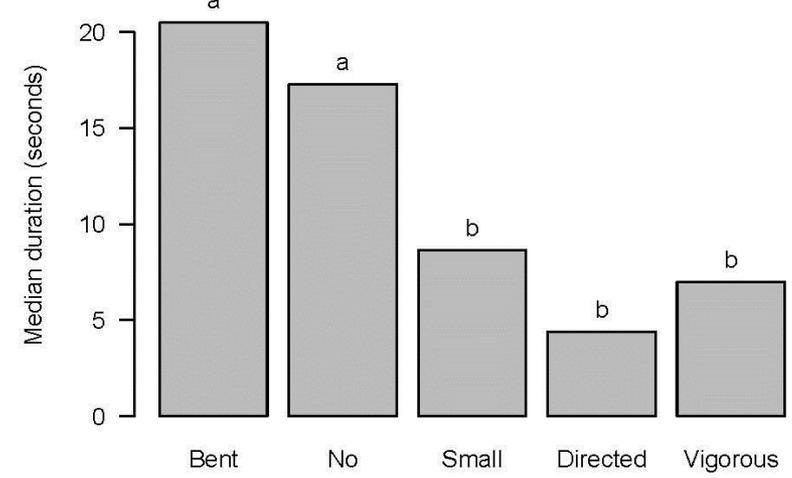
### Ear position



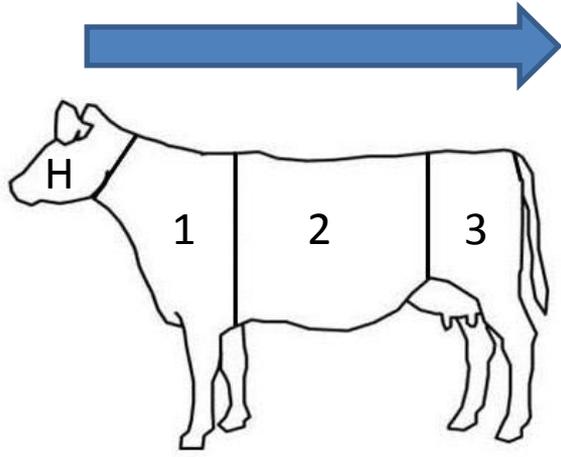
### Neck position



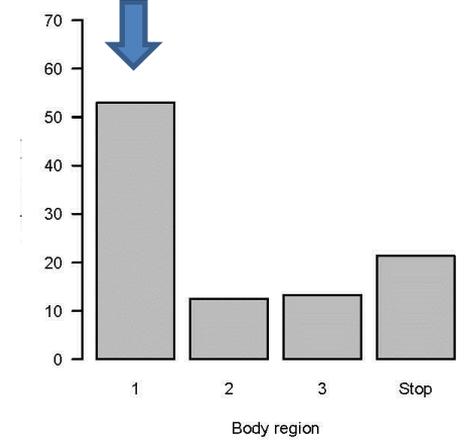
### Tail position



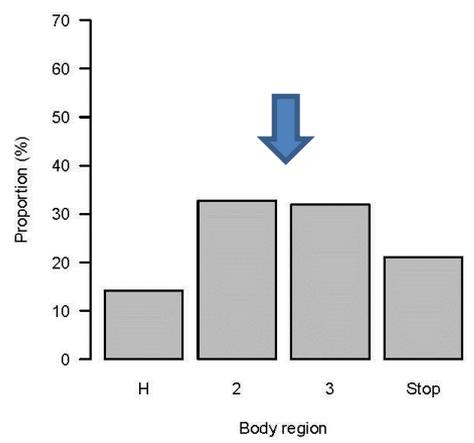
# Sequence of brush use



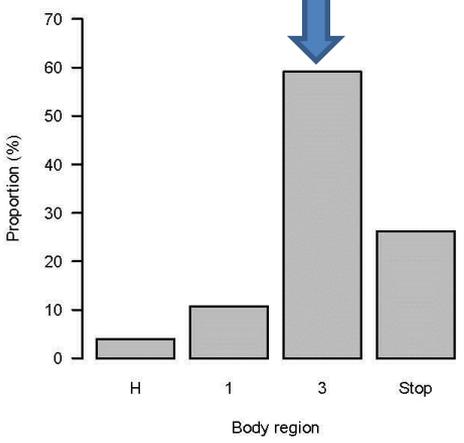
Transition, region H



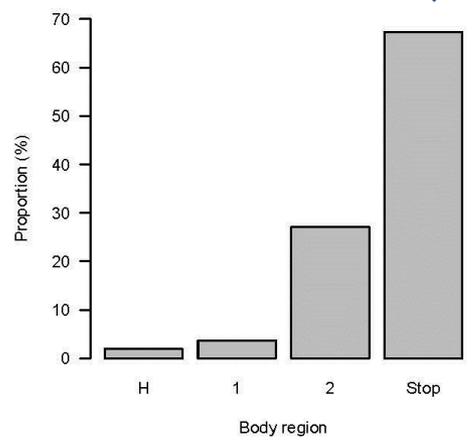
Transition, region 1



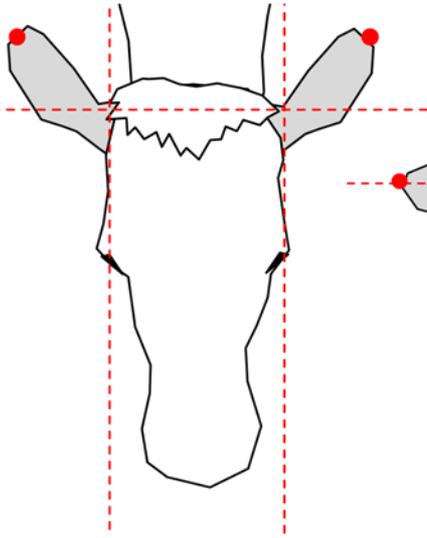
Transition, region 2



Transition, region 3

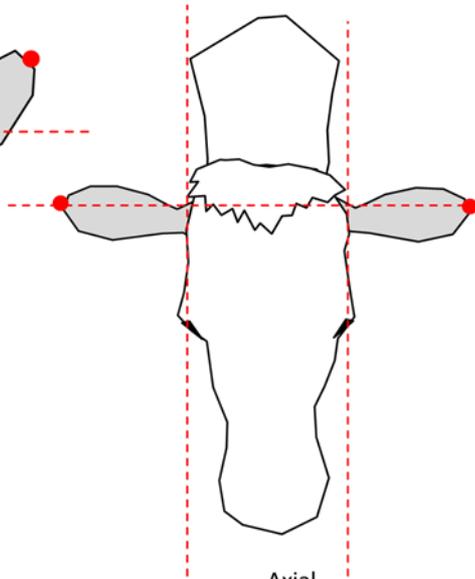


# Body posture while brushing



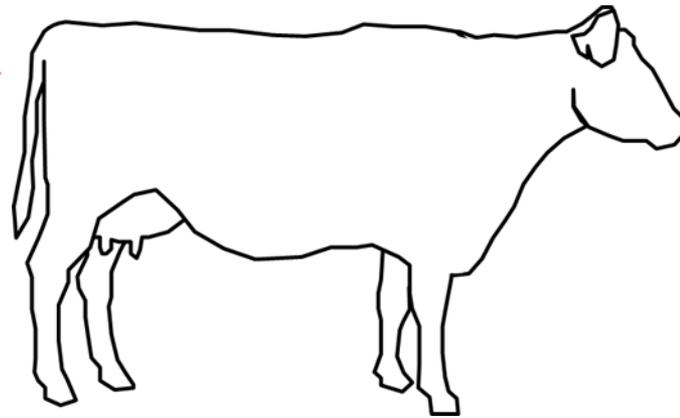
Back (up)

**44%**

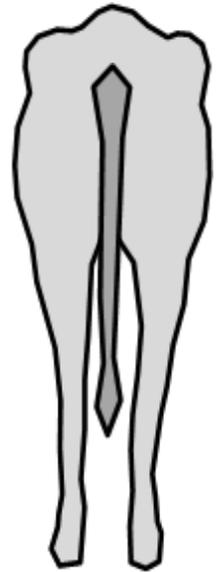


Axial

**31%**



**47%**



**52%**

Significant correlations of Pearson residual analysis between the brushed region, ear, neck and tail positions

<b>Brushed regions</b>	<b>Ear position</b>	<b>Neck position</b>	<b>Tail position</b>
<b>Head</b>	Back up	Horizontal	No/ Small/ Directed
	Back down	Above hor.	No/ Small
<b>Neck &amp; Withers</b>	Axial / Forward/ Asym.	Above hor.	No
	Axial	Down	Directed
	Back up	Below hor.	Vigorous
<b>Belly</b>	Forward	Horizontal	No
	Forward	Above hor.	Vigorous
	Asym.	Down	Vigorous
<b>Hind quarters</b>	Axial	Horizontal	Bent
	Back up/ Asym.	Below hor.	Bent



## Final considerations

- This study shows a dynamic pattern of how cows use the mechanical brushes, with a preference for brushing the hind quarters. Movement in direction from head to rump.
- We showed that there is a difference in body postures of ears, neck and tail while cows brush different parts of the body.
- We speculate that specific posture combinations might reflect different levels of arousal while experiencing a positive emotional state.

**Thanks for your attention**



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**Forskningsrådet Formas**

*Formas främjar framstående forskning för hållbar utveckling*