

EAAP 2011, Stavanger, August 29th 2011

# Injury recording in horses kept in groups



*Cecilie M. Mejdell<sup>1</sup>, Grete H.M. Jørgensen<sup>2</sup>,  
Therese Rehn<sup>3</sup>, Linda Keeling<sup>3</sup>, Kjersti  
Fremstad<sup>4</sup> and Knut E. Bøe<sup>4</sup>*

*1 Norwegian Veterinary Institute, Oslo*

*2 Bioforsk Nord, Tjøtta, Norway*

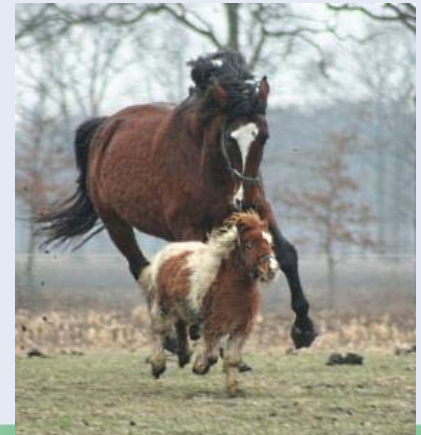
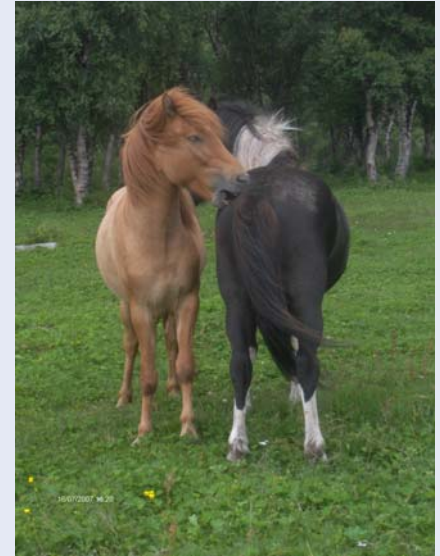
*3 Swedish University of Agricultural Sciences, Uppsala*

*4 Norwegian University of Life Science, Ås*



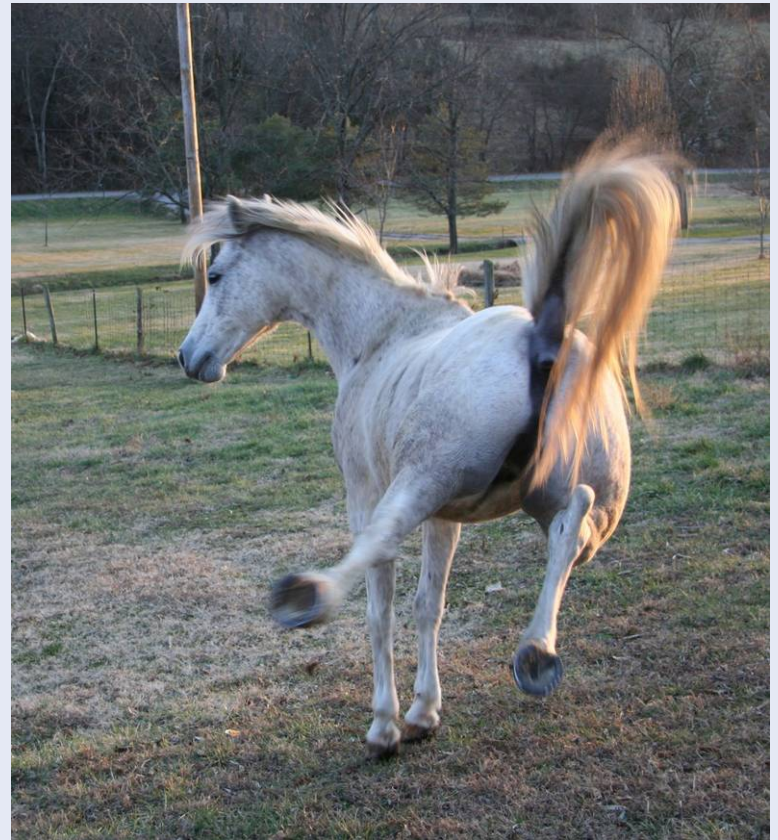
# Group housing of horses and injury risk

- Group housing is beneficial for the behavioural aspects of animal welfare
- But: Risk of aggression leading to injuries caused by kicks, bites, or being chased into obstacles
  - Derungs et al. 2004: 22 % of the injuries treated in a horse clinic caused by kicks, 71 % happened on pasture. 47.2% of kicks associated with fracture.
  - Knubben et al. 2008: 5.6 % of all veterinary consultations in horses due to kicks or bites, affecting 1.7% of the horses.
  - Grandin et al. 1999: 51% of horses transported to slaughter had bruises ascribed to bites



# Welfare dilemma - behaviour vs health?

- Risk of injuries is a major concern among horse owners
- A common reason for NOT keeping horses in groups
- How common are injuries?
- How severe are they?
- Can risk be reduced?



# Recording injuries

- Developed a protocol for recording external injuries
  - Severity
- Number
  - Location on horse' body
  - + lameness
- Score per injury, not per horse (e.g. Grogan et McDonnell)
  - 5 categories (1-5, 0 represents no injury)



# 5 categories

## Category 1:

- Lesion involving hair loss only



## Category 2:

- An abrasion (scrape) in the skin (but not through the skin)
- and/or a moderately sized contusion (bruise), with or without hair loss



## Category 3

- A minor laceration
- and/or
- A larger contusion (bruise) with obviously swollen parts



# categories, cont.

## Category 4

- Laceration involving injury to deeper tissues, or
- of a size that normally requires surgery



## Category 5

- Extensive and severe injury that may lead to long lasting loss of function or even death/euthanasia



# Reliability testing of the scoring system

## - method

- 40 photo images of injuries, 6-9 from each category, were presented to 43 Norwegian and Swedish agricultural students
- Random order of photos (20 CD versions)
- Each student scored pictures twice (different CD) appr 10 days apart, after an introduction / training session
- Each image scored 86 times
- Analysed for intra- and inter-observer reliability and agreement with "golden standard" (vet)

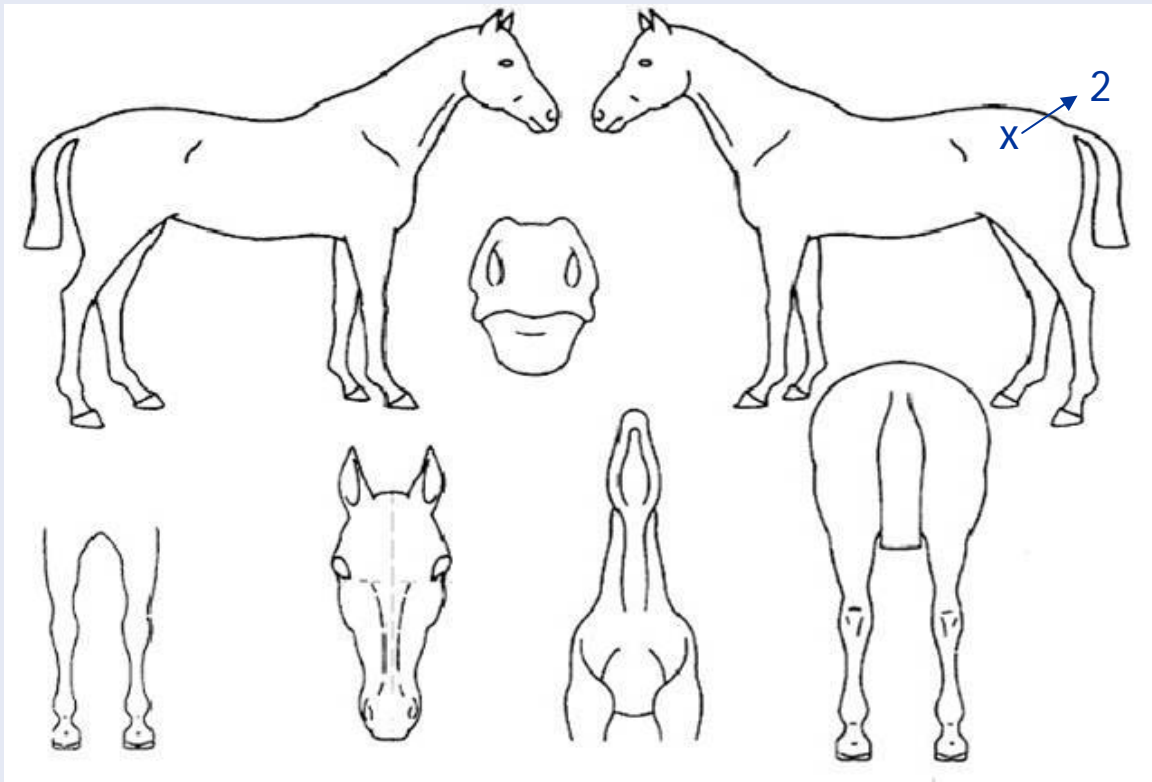
# Reliability testing, results

- **Intra-observer agreement high**
  - Kendall's W 0.94-0.99,
  - mean kappa 0.72
  - 86% of observers had kappa > 0.6 (substantial)
- **Inter-observer agreement generally high**
  - overall Kendall's W 0.91
  - mean kappa 0.59 (moderate)
  - very high agreement for categories 1 and 5
- **Agreement with "golden standard" generally high**
  - Kendall's tau 0.88, range 0.79-0.95
  - mean kappa 0.66
- **Conclusion: Scoring system easy to learn, satisfactory reliability to be clinically useful**



# Field studies, method

- Injury scoring system (5 categories)
- Sketch of horse, for location



# Field studies, cont.

- The injury recording system used throughout the "group housing horses" - project (NKJ)

[www.group-housing-horses.net](http://www.group-housing-horses.net)

- 378 horses in 67 groups
- An additional Norwegian study (100 riding horses kept in 20 different groups)



# Results injuries

- A total of 1124 injuries
- Severe injuries (i.e. cat. 4, 5) not found
- Minor injuries (cat. 1) dominated
- Group composition had no significant effect on incidence of injuries (Keeling et al 2010)
  - Some breed effects
  - Most injuries soon after mixing
- Management factors influence on aggressive behaviour
  - feeding - less on pasture, less with ad lib feeding (Jørgensen et al. 2009)
  - space - less in larger paddocks (Jørgensen et al. 2009)
  - avoid feeding/water close to gates
  - stable groups - less (Christensen et al. 2011)



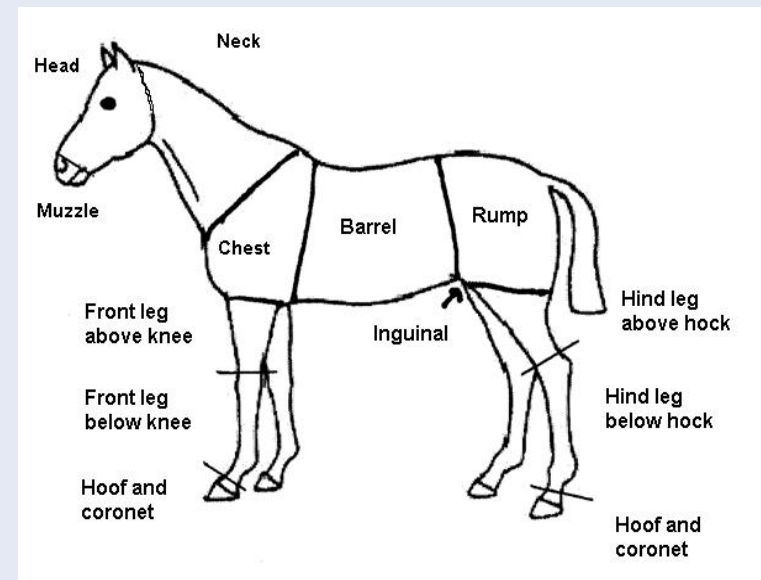
# N=100 riding horses kept in 20 groups at 14 premises in Norway (Mejdell et al. 2010)

	<i>Injury category</i>				
	<b>1</b> Hairloss only	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Very severe
28 horses (28%) had no (0) injuries					
<b>% of all injuries</b> (n=308)	<b>79%</b>	<b>18%</b>	<b>4%</b>	<b>0</b>	<b>0</b>
No (%) of horses having injury (N=100)	69	29	9	0	0
Average no of injuries per horse having that injury category	3.5	1.8	1.3	0	0
Median no of injuries per horse	1	0	0	0	0
Maximum no of injuries on single horse	<b>28</b>	10	3	0	0



# Injuries, body location

- Rump and barrel got most injuries
- Hind legs more injuries than front legs
- Cat. 3 injuries mainly found on head and legs



# Conclusion

- Owner concern for injuries is not supported by our data
- Design of enclosure and management factors (e.g. space, feeding, routines at mixing, iron shoes) important to reduce risks and enhance welfare

## Thanks to:

- Nordic Joint Committee for Agricultural Research (NKJ) for funding
- Co-workers in the project
- Horse owners
- Students

