Preventing lameness in group housed sows

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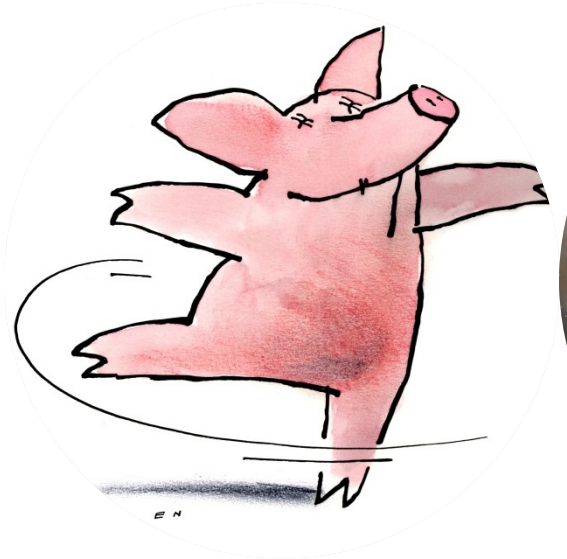

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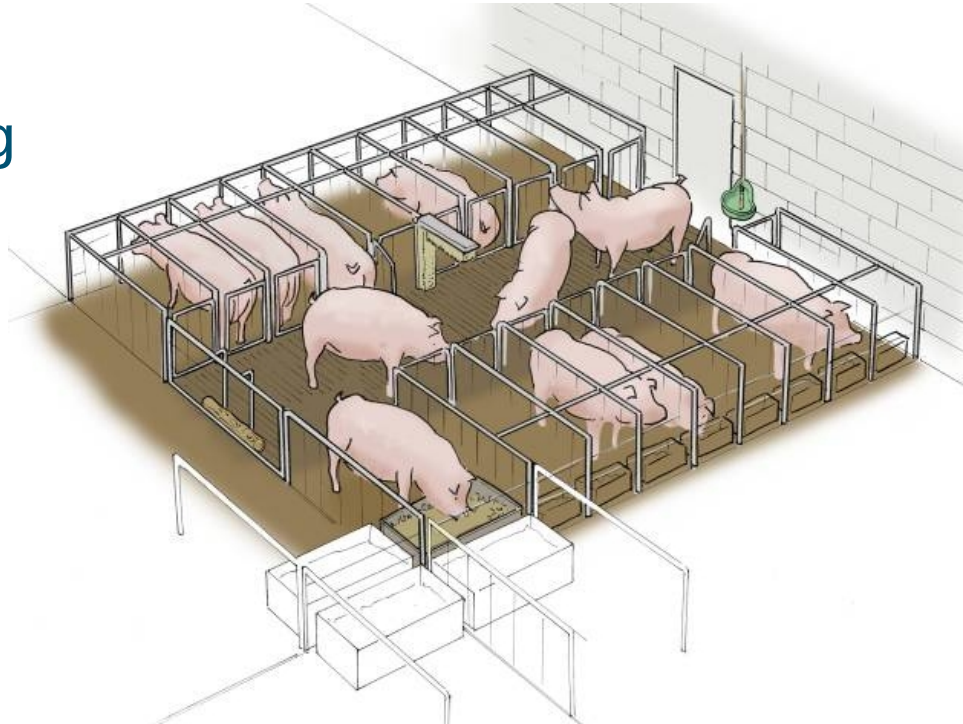
Outline

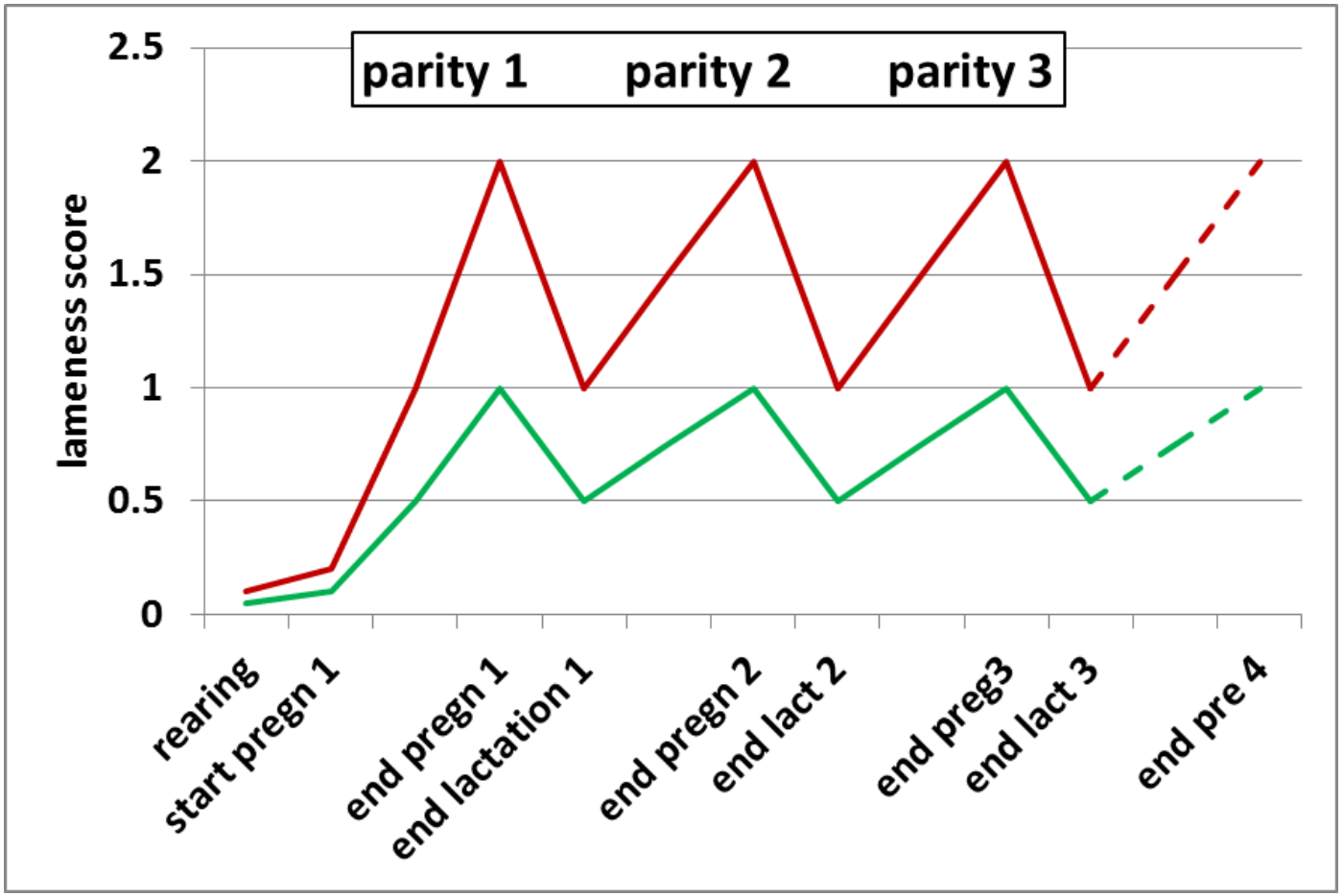
1. History of group housing in NL
2. Floor properties and lameness
3. Group management and lameness
4. Successful group housing



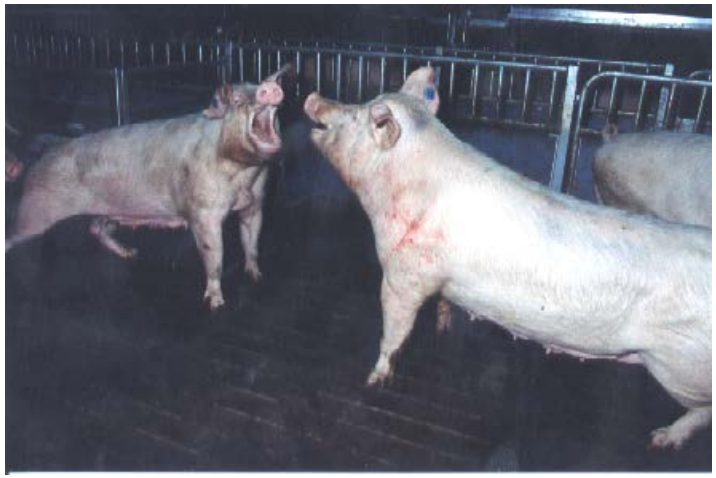
1. History of Dutch sow group housing

- 1985-1990: Introduction of new ESF systems
- 1991: “Too early” based on system comparison
- 1990-1997: Decline in number of group housed sows
- 1997: New study: Group housing possible (4d post service)
- 1998: Group housing in new Welfare Regulations
- 2003: NL 2008 deadline postponed to EU 2013

Lameness over parities: recovery in lactation



Problems in the nineties



- Aggression
- Vulva biting
- Inspection (management more complex)
- Lameness
  - 1991 – 25% of culling caused by lameness
  - 1996 – 20% of culling caused by lameness

Lameness In Group Housing in NL

- 1990-1995 Large project on lesions and lameness
- 2005 Extra attention by “Claw Check” (pig farmers)
- 2011 Welfare Quality 81 NL-Farms, each 30 Sows

2. Floor properties and lameness

2.1 Abrasiveness

2.2 Friction

2.3 Softness

2.4 Slots and slats

(based on Waldmann, 2004)

2.1 Floor properties - abrasiveness

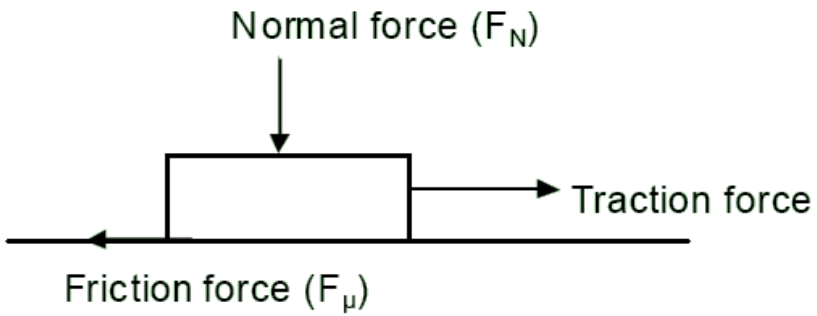
	Floor property risk
Abrasiveness	Too high roughness

- Concrete for abrasion is fine
- Long toes on metal and plastic slatted floors
- Systems with bedding or plastic/metal floors: partly concrete necessary
- Don’t forget abrasive floor in gilt rearing systems

2.2 Floor properties - friction

	Floor property risk
Friction	Too smooth, unprofiled floor

Animal type	Coefficient of sliding friction (Ms)
Gilts and sows	0.40 to 0.25
Fattening pigs	0.35 to 0.20
Weaning pigs	0.30 to 0.20

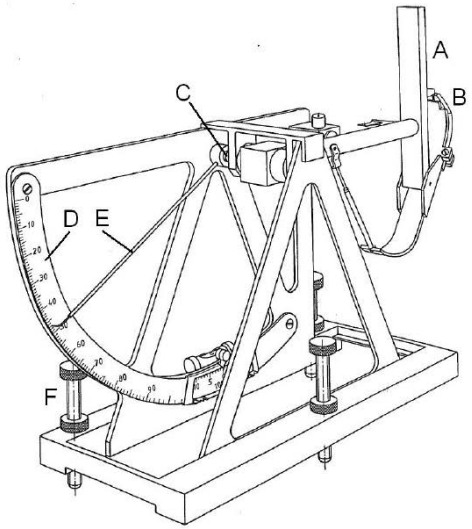


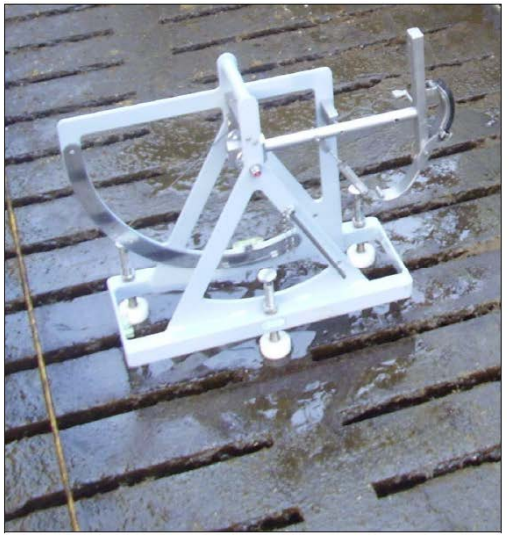
$F_\mu = COF \times F_N$

Relationships between normal, traction and friction forces and coefficient of friction (COF)

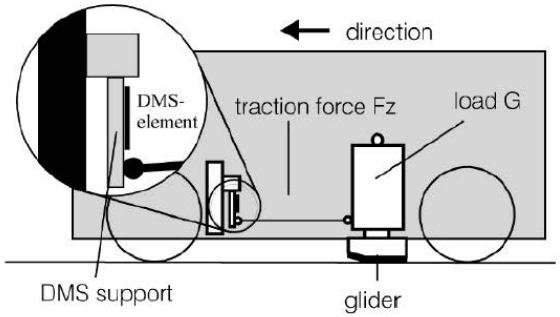
(Baxter, 2009; von Wachtenfelt, 2009)

Measuring Resistance



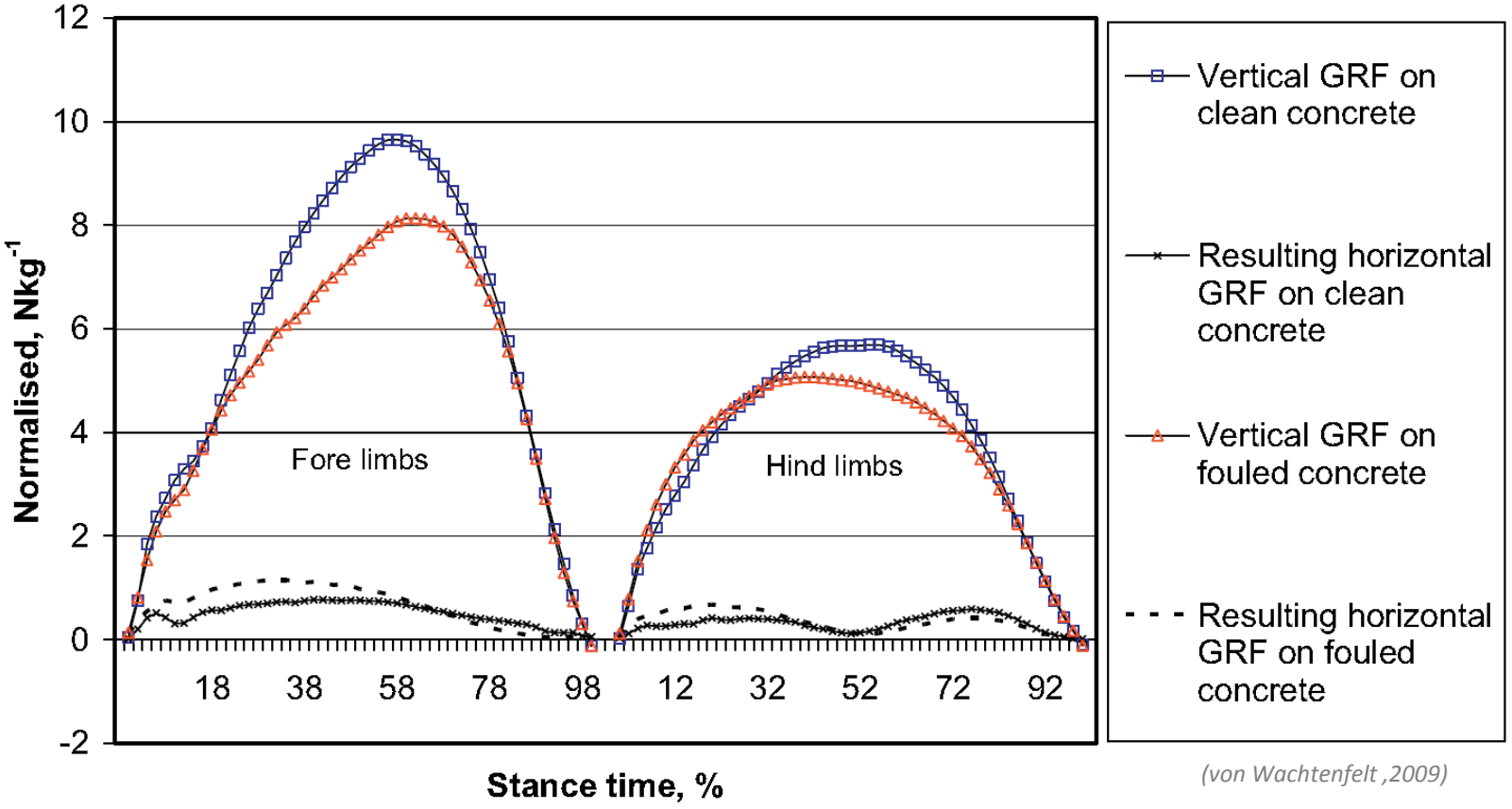


Leroux measurement



FSC 2000

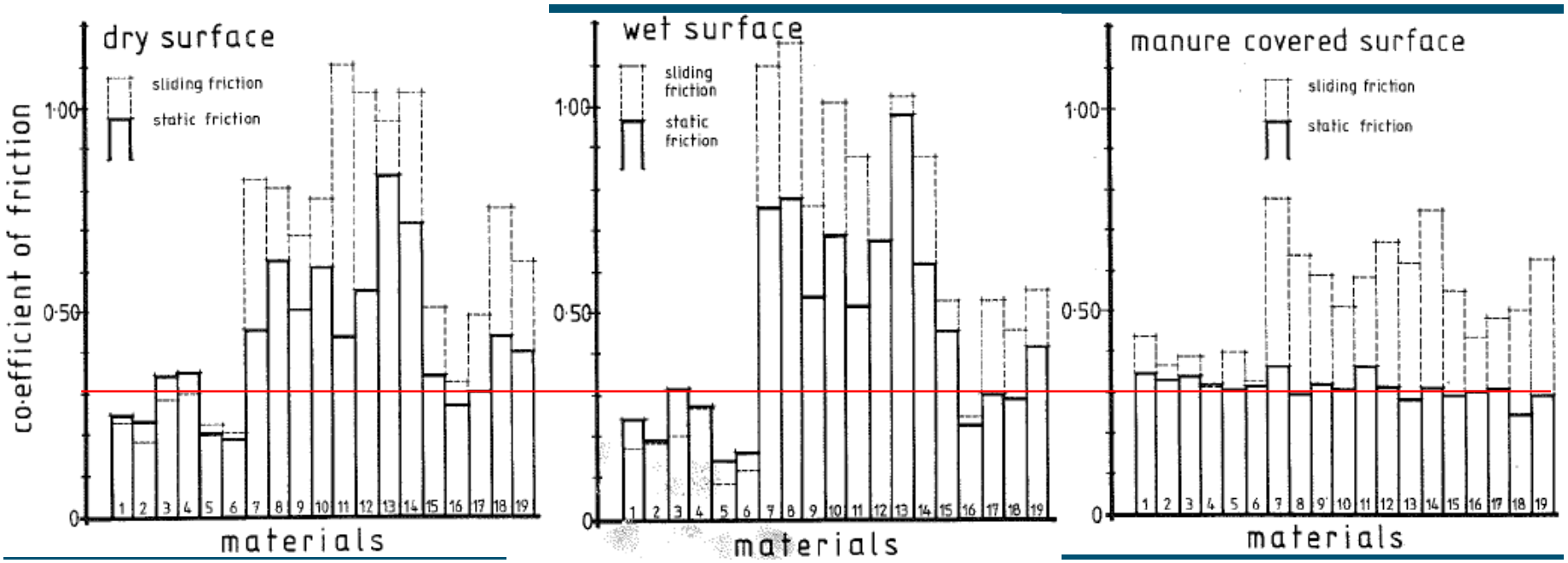
Forces on front and hind legs on clean and dirty concrete



(von Wachtenfelt ,2009)

Vertical and resultant horizontal GRF's for fore and hind limbs from the mean of 10 pigs walking in a curve on clean and fouled concrete.

Less friction on manure covered surface

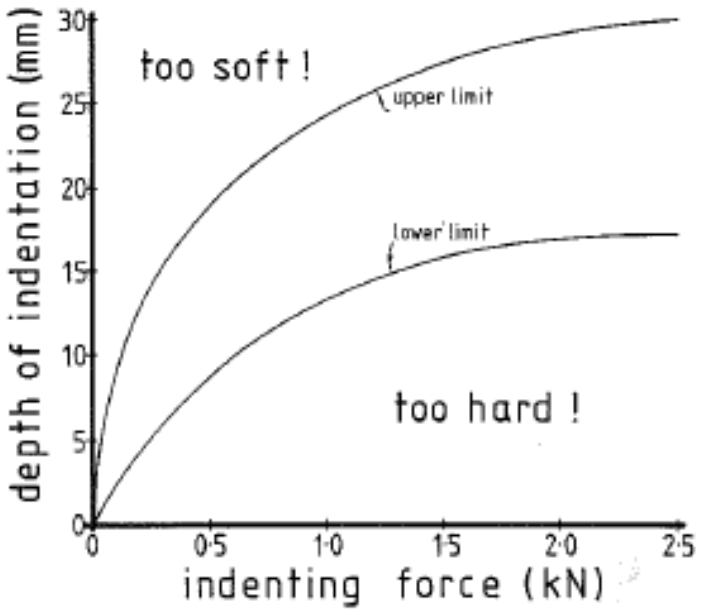


1	Particle board	15	22mm rubber mat/soft core
2	Pinewood	16	20mm unused LBT pvc coated/c. fibres
3	Steel trowelled concrete	17	40mm " " mattress "
4	Floated concrete	18	20mm " " " "
5	Polyurethane	19	40mm " " " "
6	Polyurethane/rubber		
7	17mm mat, 1/3 round grooves, parallel.		
8	17mm mat, 1/2 round grooves, perpendicular.		
9	15mm mat, parallel grooves.		
10	15mm mat, perpendicular to grooves.		
11	Rubber mat. 35mm between burls.		
12	20mm Swedish test rubber mat/soft core.		
13	18mm Hungarian mat		
14	13mm rubber mat		

(Baxter , 1984)

2.3 Floor properties - softness

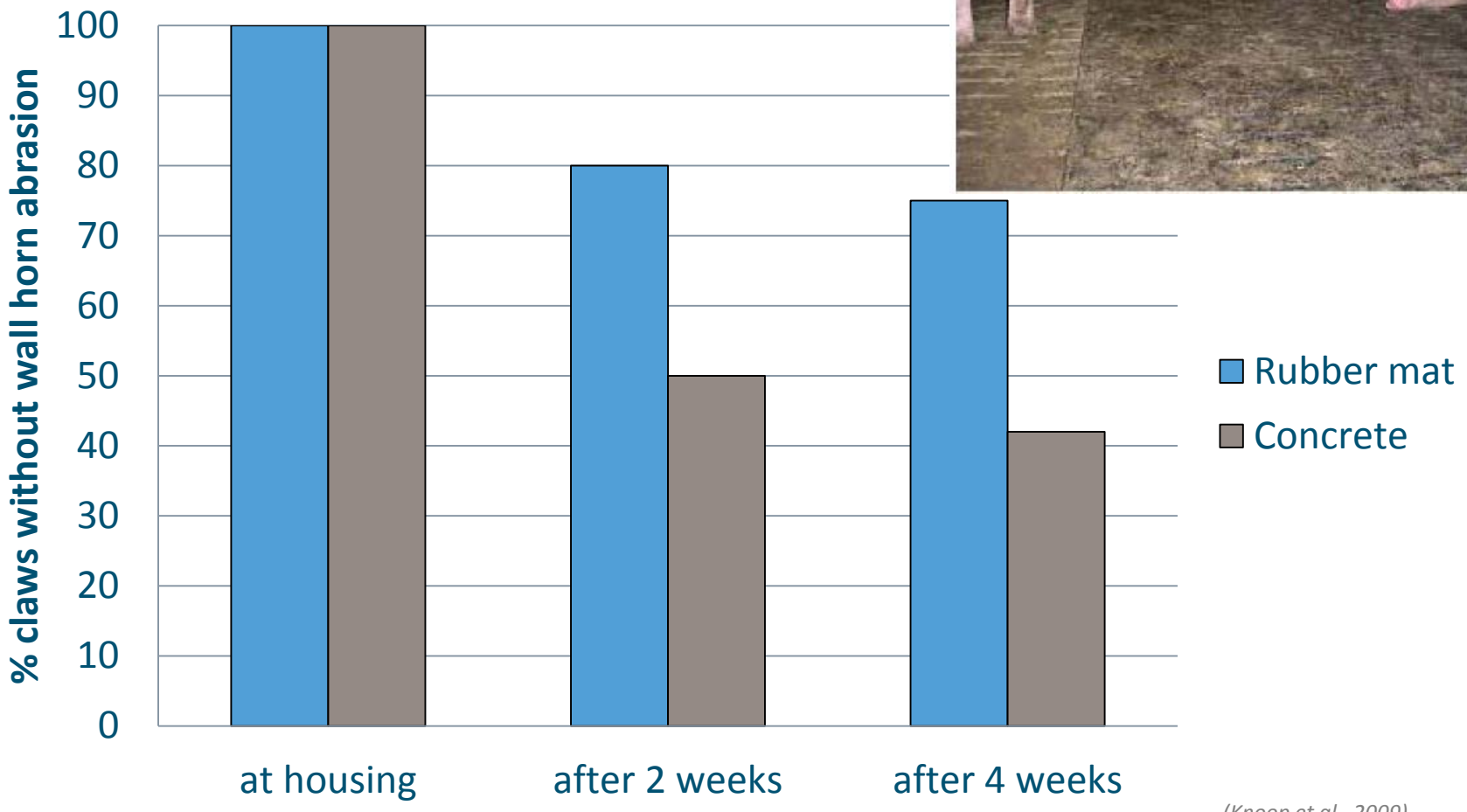
	Floor property
Softness	Too soft floor (e.g. straw, rubber)
	Sharp splits, slats, floor defects



(Waldmann, 2004)

Softness limits of floors as suggested by Swedish test in cows

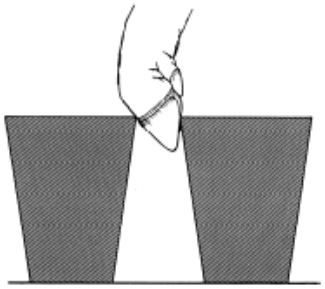
Rubber mats



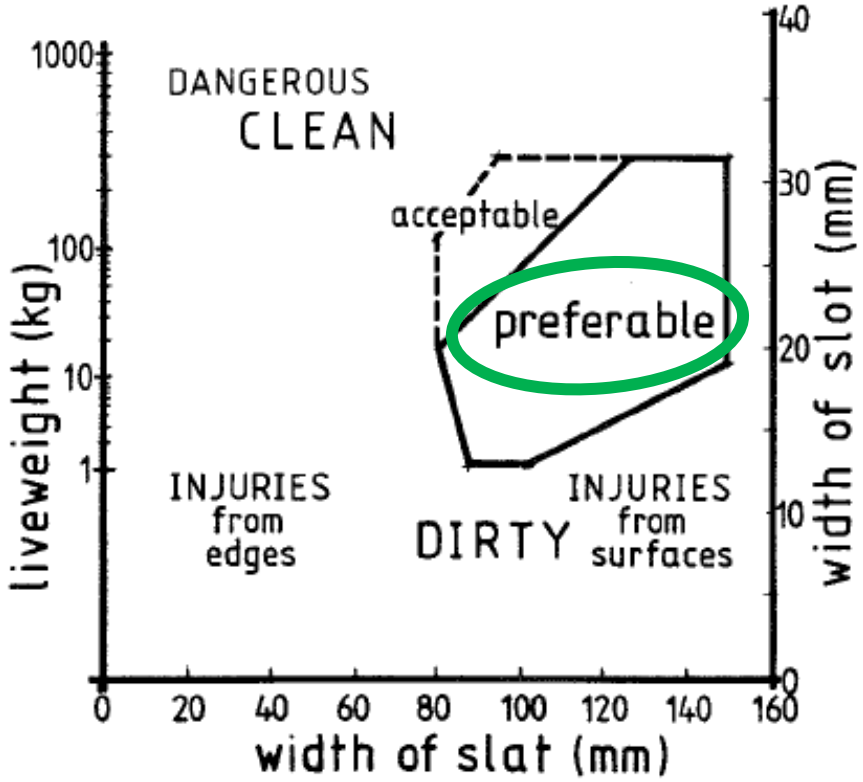
(Knoop et al., 2009)

2.4 Floor properties – slot/slat widths and ratio

	Floor property
Slots and slats	Too wide slots, gaps
	Too small slats



(Geyer, 1988)



(Baxter, 1984)

Slatted or solid floor

	Reference	Fully slatted floor	<40% solid floor	>40% solid floor
Claw problems	*Greif, 1985*	+	-	-
Claw injuries	*Jensen, 1997*	-		+
Claw defects	*Candotti, 2004*	-		+
Lameness	*Nielsen, 2004*	-		+
Bursitis	*Lyons, 1995; Smith, 1992*	-		+

(Vermeij et al., 2009)

3. Group Management – minimise mixing (risk)

Arena:

-Temporary mixing pen dry, soft floor with space

-Ad lib feed

-Hiding barriers

Not reducing aggression but minimizing negative effects

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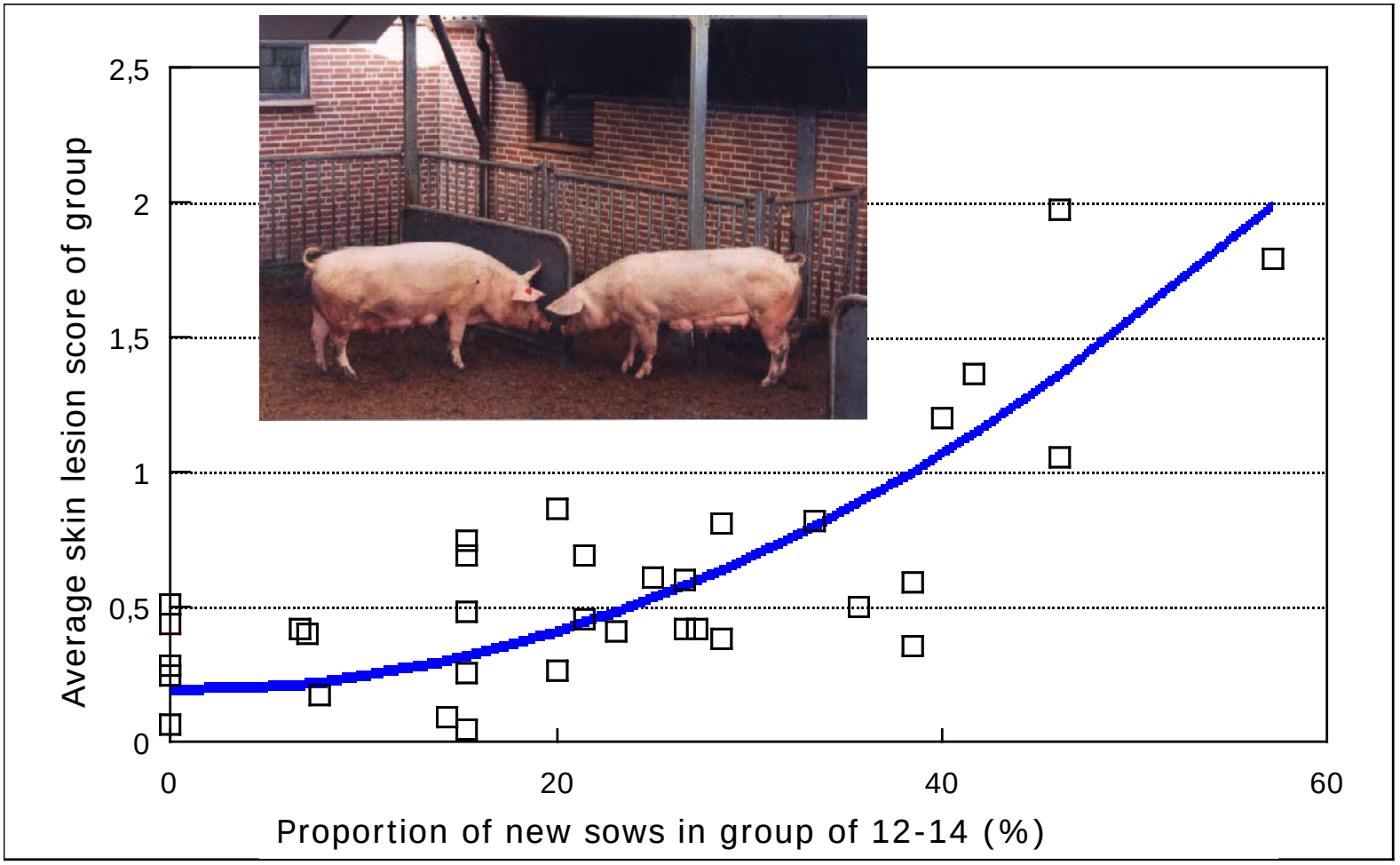
Relation between number of new sows in group and skin lesions, related to group composition before and after lactation



4. Attention for “details”:

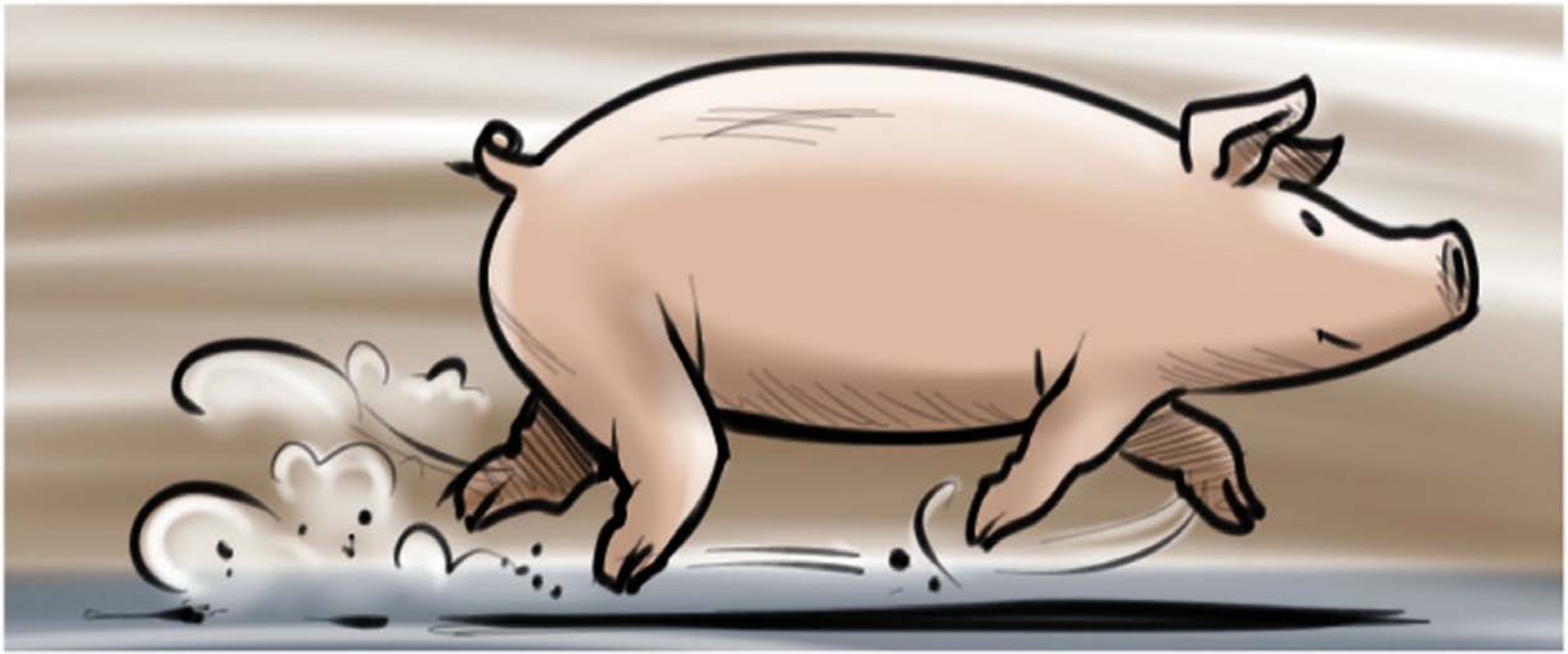
- Be critical on legs when buying/selecting gilts
- Eliminate sharp edges where equipment is fixed to floor
- Minimise barriers or steps between functional areas
- Prevent wet surfaces on level solid floors
- Make wide pen shape (width of passages, sow turns)
- Take returners to estrus out (mounting)
- Train social skills for gilts
- Expect difficult period after conversion

Successful group housing

Major Success factors:

- No obstacles, smooth floor with “grip”
- Dry and clean floor
- Space to prevent sharp turns
- Use gilts with social skills
- Limit aggression by minimizing mixing moments

Thanks for your attention



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