

A photograph of two black and white dairy calves running in a dirt pen. The calf in the foreground is running towards the camera, while the second calf is slightly behind and to the right. Both calves have identification tags on their ears. The background is a light-colored wall.

Locomotor play in dairy calves:
a high energy activity
correlated with good welfare.

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Negative vs “positive” welfare indicators



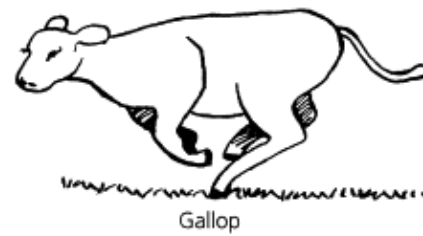
Animal welfare = Quality of life: a balance between positive and negative emotional experiences

Yeates, J. W. and D. C. J. Main. 2008. Assessment of positive welfare: A review. *The Veterinary Journal* 175(3):293-300.

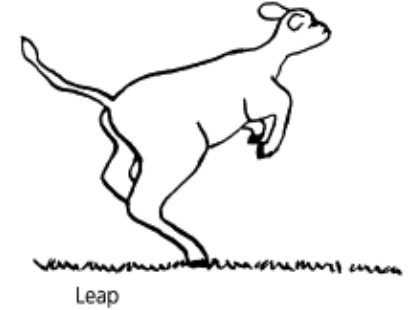
Play behaviour as a sign of good welfare



**Bak Jensen et al.1998.
Play behaviour in dairy
calves kept in pens: the
effect of social contact
and space allowance.
AABS. 56:97-108**



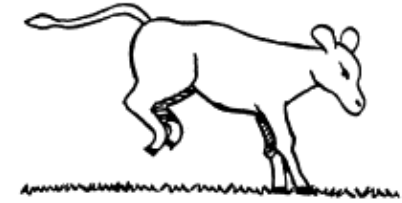
Gallop



Leap



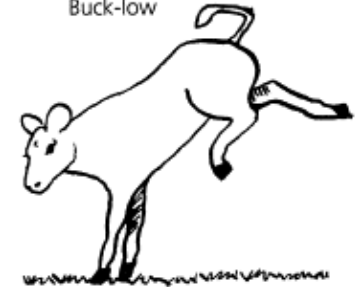
Jump



Buck-low



Buck-high



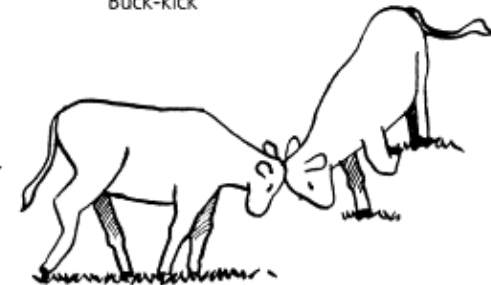
Buck-kick



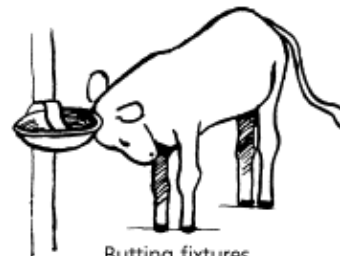
Turn



Head-shake



Frontal pushing



Butting fixtures



Rubbing straw

More locomotor play in calves when:

- ◆ Feed intake is higher (Krachun et al. 2010 AABS 122:71-76; Duve et al. 2012 JDS 95:6571-6581; Jensen et al. 2015 JDS 98:2568-2575; Miguel-Pacheco et al 2015 Animal 9:1038-1044; Rushen et al. 2016 AABS 177:6-11)

- ◆ Growth rates are higher (Miguel-Pacheco et al 2015 Animal 1038-1044)

- ◆ Reduced distress at maternal separation (Rushen et al. 2016 AABS 177:6-11)

- ◆ Calves are less fearful and more exploratory (Rushen and de Passille 2014 AABS 155:34-41)

- ◆ Reduced pain during dehorning (Mintline et al., 2013 AABS 144:22-30; Luu et al., 2013 AABS 148:21-27)

- ◆ Social housing (Jensen et al 1998 AABS 56: 97-108; Duve et al. 2012 JDS 95: 6571-6581; Jensen et al 2015 JDS 98:2568-2575)

- ◆ More space (Jensen et al. 1998 AABS 56:97-108; Jensen and Kyhn 2000 AABS 67:35-46)

- ◆ Better flooring (Sutherland et al. 2014 AABS 154:8-14)

Advantage of “positive” welfare indicators



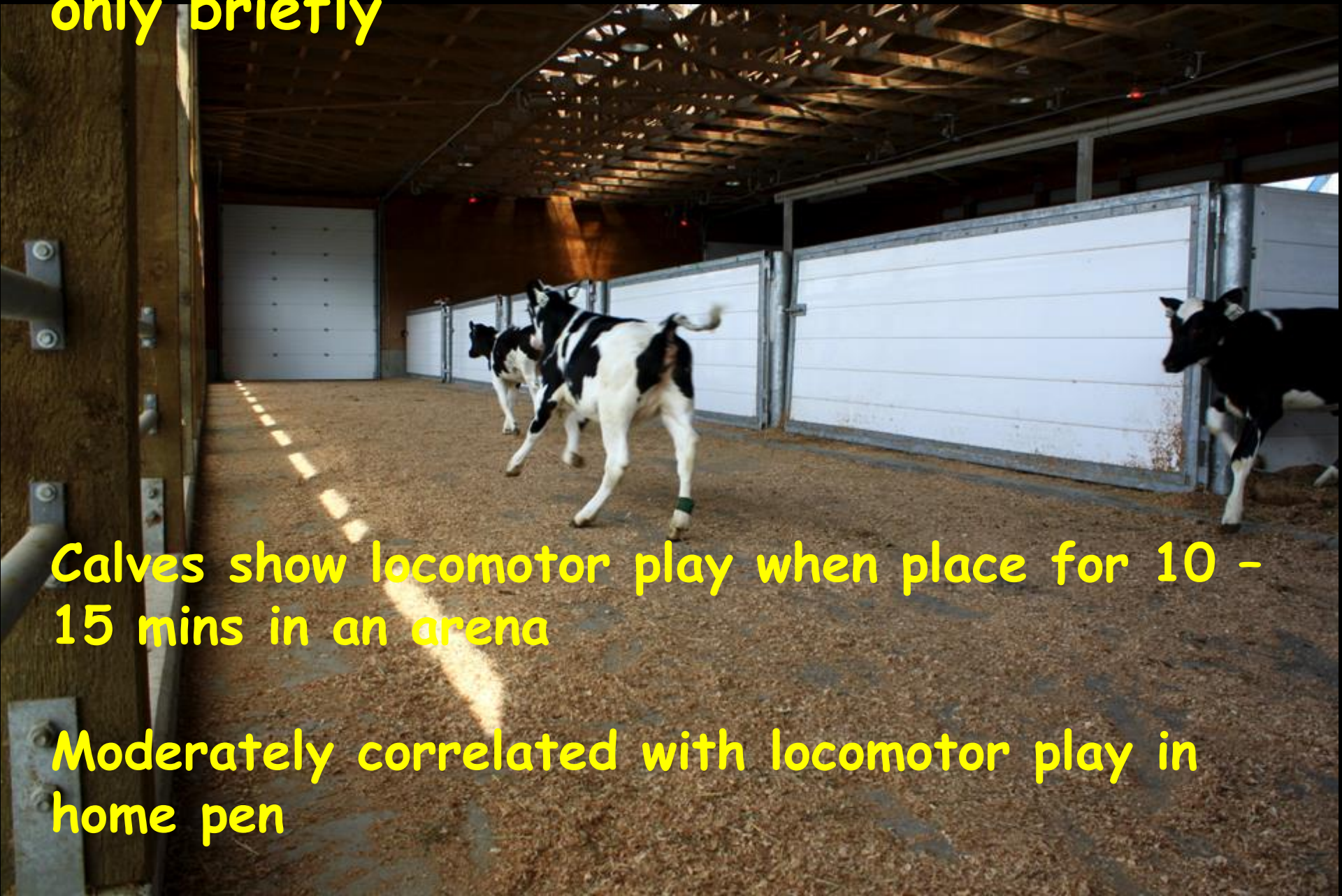
Positive indicators of good welfare
respond to a wide range of threats

Negative indicators of poor welfare often
specific to the particular threat



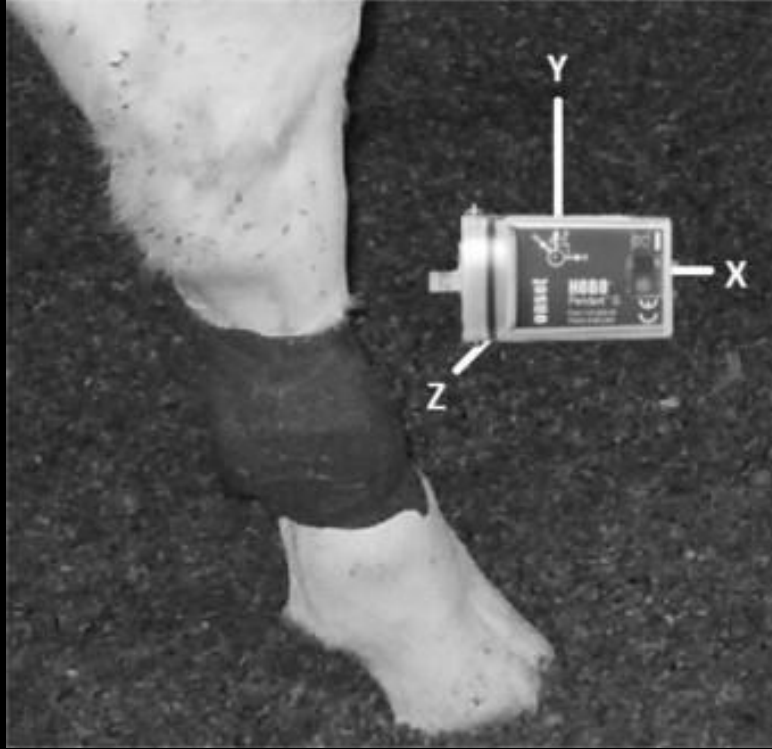
Can we
automate the
measurement
of locomotor
play?

Spontaneous locomotor play in calves occurs only briefly

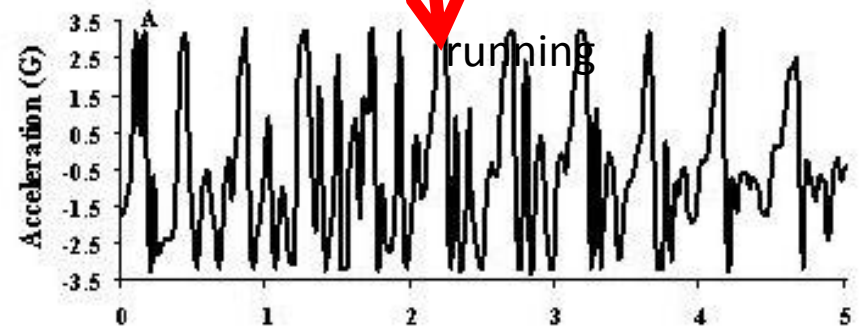


Calves show locomotor play when placed for 10 - 15 mins in an arena

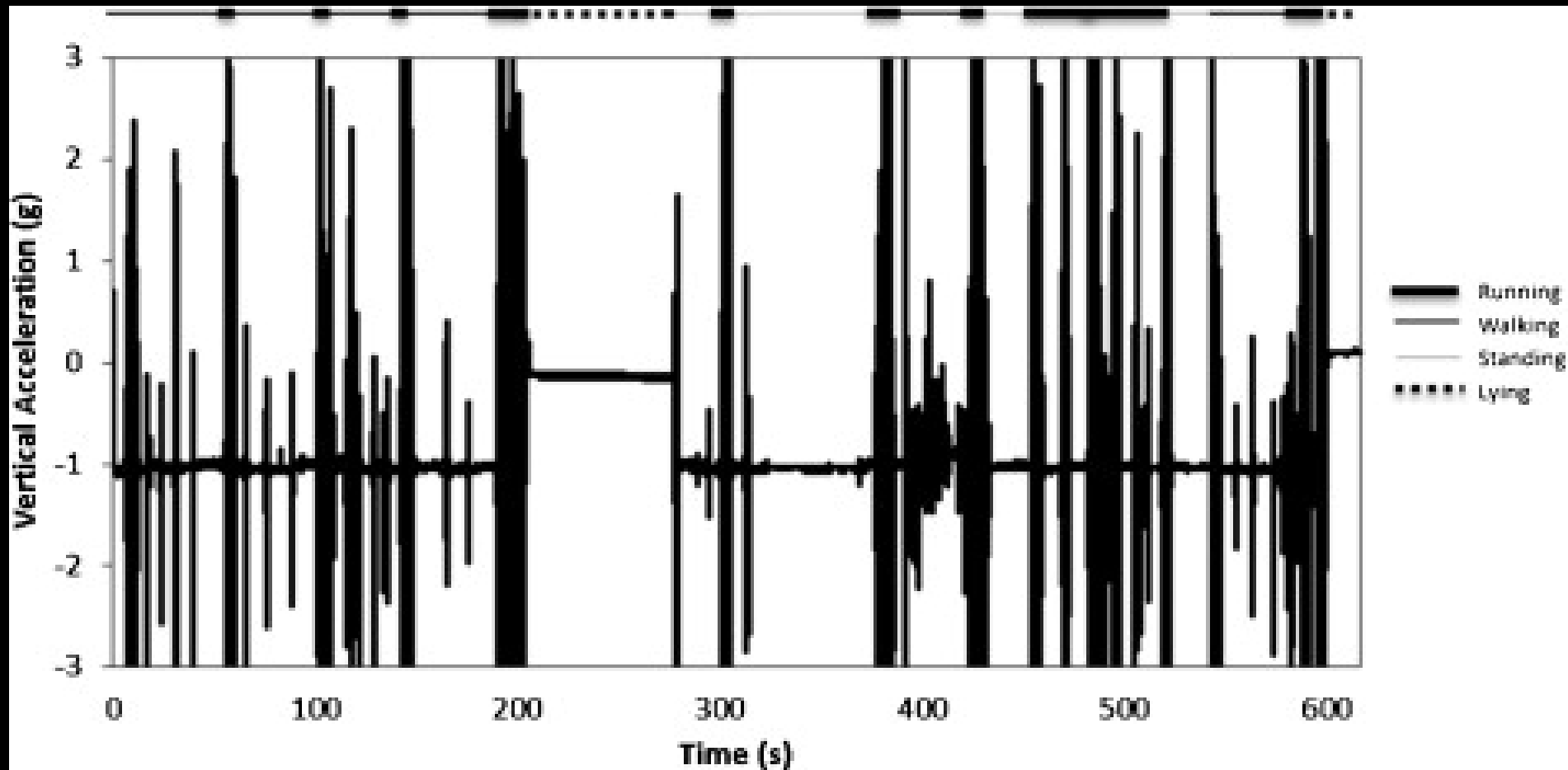
Moderately correlated with locomotor play in home pen



Accelerometers attached to a calf's leg can show steps and can distinguish between walking and running



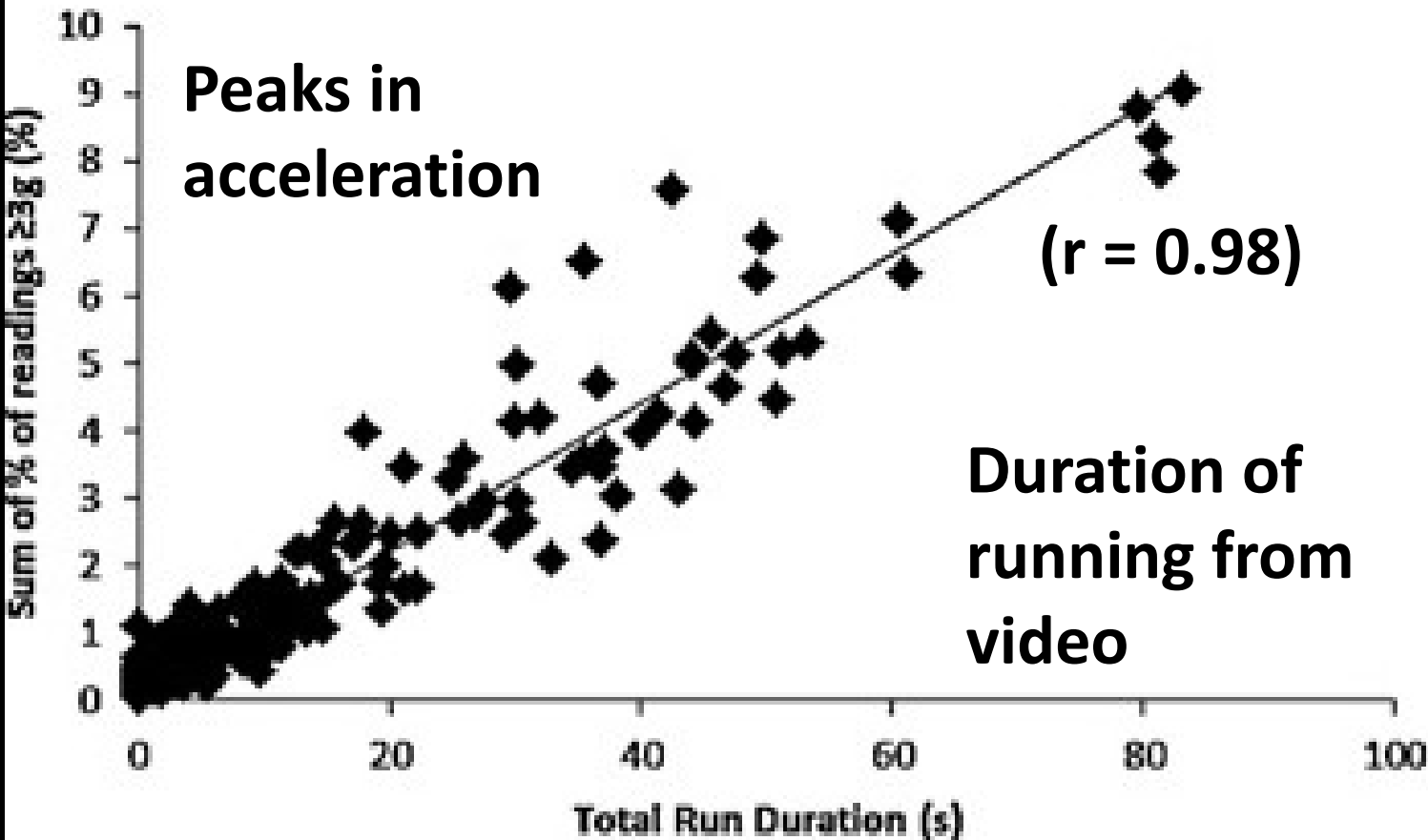
Peaks in acceleration occur when calves are running or jumping



(Luu et al., 2013 AABS 148:21-27)



Measures of peak acceleration highly correlated ($r = 0.98$) with duration of locomotor play (Luu et al., 2013 AABS 148:21-27)



Future questions ???

Social skills: Does social play prepare young cattle for life in groups?



Group-reared animals have higher rank than all isolation-reared animals. Broom and Leaver 1978

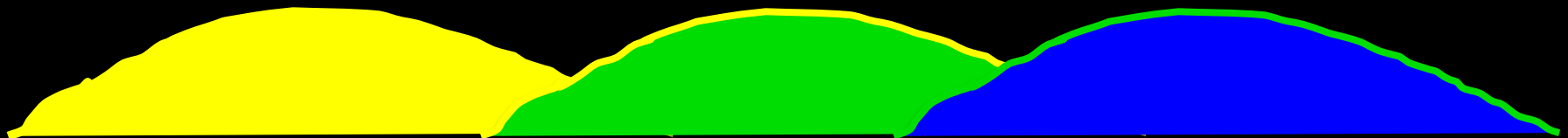
Sexual play? Relationship to sexual development and future reproduction?



Orgeur and Signoret 1984. Sexual play behaviour in lambs. *Physiology and Behavior* 33:111-118



Timing of play behaviour onset and offset as developmental markers??



Age

obrigado

