

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

Jeffrey Rushen

*University of British Columbia, Agassiz, BC V0M 1A0, Canada*

[rushenj@mail.ubc.c](mailto:rushenj@mail.ubc.c)

Within any type of housing system, there are differences between individual dairy calves in their health and welfare. Locomotor play is a high energy activity that is a sign of good health and welfare. In a series of experiments, we examined locomotor play in group housed un-weaned dairy calves (1 – 8 weeks of age) to determine the extent that individual differences in locomotor play were related to individual differences in growth rates and in calves' fearfulness or curiosity in response to novelty. The frequency of jumping and the duration of running were observed both in the calves' home pens and during a 10 min exposure to a novel arena. In both situations, there were large differences between individual calves, and calves which ran most in the home pens ran most in the arena ( $r = 0.65$ ;  $n=20$ ;  $P = 3g$ ) was highly correlated with the frequency of jumping ( $r = 0.86$ ;  $n=30$ ;  $P 0.10$ ), suggesting that they are specific to high energy activity. There are relatively stable individual differences in the extent that calves show locomotor play and these differences reflect phenotypic differences in growth rates and emotional responses to novelty. Automated measures of locomotor play have potential to be a novel method of automatically phenotyping calves in terms of their potential for good or poor welfare.

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