Study finds dogs experience runner's high similar to humans

May 16 2013, by Bob Yirka

A yellow labrador retriver dog with pink nose. Credit: Wikipedia.

(Phys.org) —A team of researchers in the United States has found that dogs appear to gain a "high" from running, similar to the well known "runner's high" experienced by people who run or jog frequently. In their

paper published in *The Journal of Experimental Biology*, the group describes how they measured neurotransmitter levels in humans, dogs and ferrets as they moved on a treadmill to determine neurobiological reward levels.

Most people are aware of the pleasurable feeling known as "runner's high" some people get from running, either by experiencing it themselves or hearing about it in others. Scientists have found that such sensations are due to the release of neurotransmitters into the bloodstream—one of these neurotransmitter groups, known as endocannabinoids (eCBs) have the same chemical structure as THC, the chemical responsible for the high people get from marijuana. In this new effort, the researchers wanted to know if other animals also experience a runner's high.

To find out, the team enlisted the assistance of some human volunteers, several dogs and some ferrets. Each was put on a treadmill set at a pace fast enough to simulate running. Afterwards blood samples were taken. In analyzing the results, the researchers found elevated levels of eCBs for both the humans and dogs, but not in the ferrets. In another test, the researchers slowed the pace of the treadmill to just a walk for the dogs and humans and found no change in eCB levels.

The researchers note that both humans and dogs are part of a group known as cursorial animals—animals that have long legs meant for running. Ferrets on the other hand, are not cursorial, thus they don't gain any pleasure from running long distances.

The researchers theorize that neurobiological rewards are a part of the evolutionary history of animals with long legs meant for running and strong lungs—they helped keep them fit. Running, particularly when not necessary, they suggest, kept such animals in tip-top shape allowing them to escape predators and to hunt efficiently. They noted also that other

studies have shown that the fitter a group of primates are, the bigger their brains grow.

Based on their results, the researchers suggest, it's likely other cursorial animals, such as cats, experience a runner's high as well.

More information: Wired to run: exercise-induced endocannabinoid signaling in humans and cursorial mammals with implications for the 'runner's high' *J Exp Biol* 215, 1331-1336
jeb.biologists.org/content/215/8/1331.abstract

Abstract
Humans report a wide range of neurobiological rewards following moderate and intense aerobic activity, popularly referred to as the 'runner's high', which may function to encourage habitual aerobic exercise. Endocannabinoids (eCBs) are endogenous neurotransmitters that appear to play a major role in generating these rewards by activating cannabinoid receptors in brain reward regions during and after exercise. Other species also regularly engage in endurance exercise (cursorial mammals), and as humans share many morphological traits with these taxa, it is possible that exercise-induced eCB signaling motivates habitual high-intensity locomotor behaviors in cursorial mammals. If true, then neurobiological rewards may explain variation in habitual locomotor activity and performance across mammals. We measured circulating eCBs in humans, dogs (a cursorial mammal) and ferrets (a non-cursorial mammal) before and after treadmill exercise to test the hypothesis that neurobiological rewards are linked to high-intensity exercise in cursorial mammals. We show that humans and dogs share significantly increased exercise-induced eCB signaling following high-intensity endurance running. eCB signaling does not significantly increase following low-intensity walking in these taxa, and eCB signaling does not significantly increase in the non-cursorial ferrets following exercise at any intensity. This study provides the first evidence that inter-

specific variation in neurotransmitter signaling may explain differences in locomotor behavior among mammals. Thus, a neurobiological reward for endurance exercise may explain why humans and other cursorial mammals habitually engage in aerobic exercise despite the higher associated energy costs and injury risks, and why non-cursorial mammals avoid such locomotor behaviors.

Citation: Study finds dogs experience runner's high similar to humans (2013, May 16) retrieved 22 September 2024 from https://phys.org/news/2013-05-dogs-runner-high-similar-humans.html