Biology

Share this:

Gait can be defined as the manner by which an animal moves. This essay will detail the standard gaits of addition to the underlying concepts of these gaits and examples of the animals which practice them. The terms used to describe gaits which will be outlined along with the classification of various gaits.

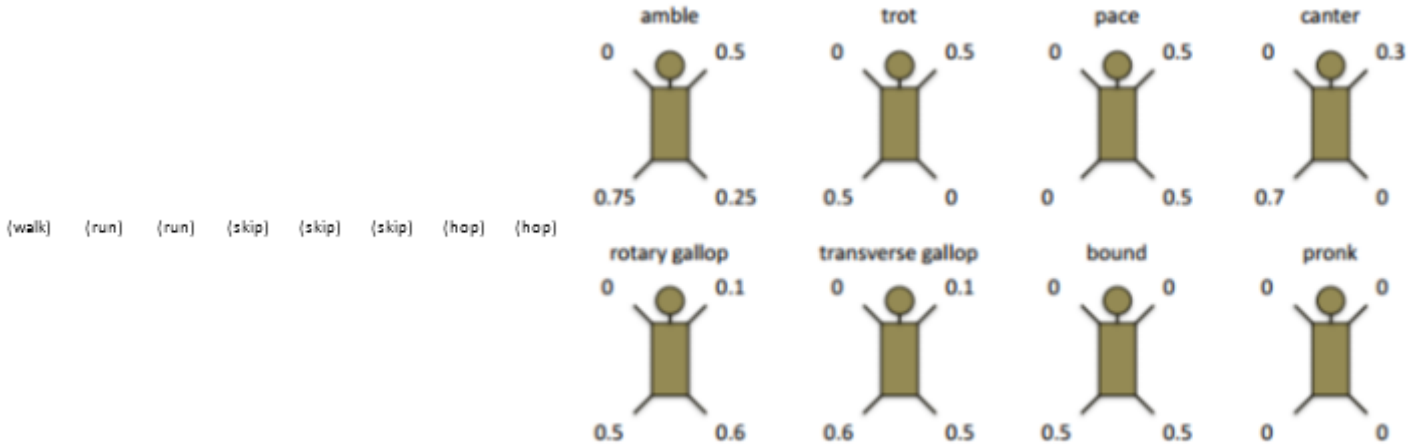
Stride is defined as a complete cycle of leg movements, i.e. a select foot being set down to the next setti foot is only lifted and set down once in each stride. Stride is further described by stride frequency, f, the and stride length, λ, the distance travelled in a stride. Thus, average speed, v, of an animal's gait can be c

The duty cycle of a foot is defined as the duration the foot is on the ground as a fraction of the stride. In feet of a pair have approximately equal duty factors. Generally, in bipeds, when the duty factor is greater (both feet on the ground at some point) and when it is less than 0.5 it is a run (both feet off the ground a

The relative phase of a foot is defined as the time the foot is set down as a fraction of the stride. The firs relative phase 0 and the rest have a relative phase between 0 and 1.

There are four different classifications of gaits for bipeds: walk, run, skip and hop. The walk and run gaits alternating legs swings, whereas the skip and hop gaits have asymmetrical footfalls and synchronised leg

Bipedal walking in humans is described as a pendulum movement of the legs with the hips scribing a circ Humans use walking as their primary gait as it is the most highly efficient and least energy consuming ga comes from the pendulum movement of the legs; the basic principle of a swinging pendulum is conserva



Most quadrupeds are not capable of all gaits due to variables in their body (e.g. leg length, knee bend, fo favour certain gaits over others due to energy expenditure. Quadrupeds generally use symmetric gaits fo asymmetric gaits for faster running. For example, a horse with increasing speed will walk, trot, canter the energy efficient to do so. The trot is the most common run for quadrupeds, although camels pace and w a walk to a canter. Quadrupeds like turtles, with slow muscles, can only walk, lifting one leg up at a time remaining three feet on the ground.

In conclusion, bipeds and quadrupeds move by a variety of gaits, choosing the most suitable and energy

- **Zoe Gargulak**

References

Michael W. Whittle, 2007, "Gait Analysis: An Introduction"

R. McN. Alexander, 1984, "The Gaits of Bipedal and Quadrupedal Animals"

http://www.physicsclassroom.com/mmedia/energy/pe.cfm (accessed: 14/03/16)

R. McN. Alexander, 2004, "Bipedal Animals, and their Differences from Humans"

Hugh Tyndale-Biscoe, 2005, "Life of Marsupials"

Alberto E. Minetti, 1998, "The Biomechanics of Skipping Gaits: a Third Locomotion Paradigm?"

Physical Principles of Biological Processes 2 (16B), 2017, Lecture 5: Posture and Gait