

Biological motion as a cue for the perception of size.

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Animals as well as humans adjust their gait patterns in order to minimize energy required for their locomotion. A particularly important factor is the constant force of earth's gravity. In many dynamic systems, gravity defines a relation between temporal and spatial parameters. The stride frequency of an animal that moves efficiently in terms of energy consumption depends on its size. In two psychophysical experiments, we investigated whether human observers can employ this relation in order to retrieve size information from point-light displays of dogs moving with varying stride frequencies across the screen. In Experiment 1, observers had to adjust the apparent size of a walking point-light dog by placing it at different depths in a three-dimensional depiction of a complex landscape. In Experiment 2, the size of the dog could be adjusted directly. Results show that displays with high stride frequencies are perceived to be smaller than displays with low stride frequencies and that this correlation perfectly reflects the predicted inverse quadratic relation between stride frequency and size. We conclude that biological motion can serve as a cue to retrieve the size of an animal and, therefore, to scale the visual environment.