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Stepping of the forelegs over obstacles establishes long-lasting memories in cats

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Summary

Although visual input is used heavily during locomotion [1], intermittent visual input is sufficient for most walking tasks. A number of techniques provide evidence that suggests that short-term visual memory is used to fill in the resulting gaps. When stepping over obstacles, for example, humans fixate the obstacle primarily one or two steps before they reach it [2], and removing their vision during the step over the obstacle does not affect their ability to step over it accurately [3]. Walking cats consistently look two or three steps ahead when walking [4], and can continue stepping accurately among obstacles for about four steps when visual input is suddenly removed [5]. This use of short-term memory raises questions pertinent for those interested in the neurobiology of walking as well as those interested in memory in general. Our

laboratory has begun to exploit the fact that walking quadrupeds must rely on some form of visual memory to guide their hind legs over obstacles. Our experiments show that stepping over obstacles triggers long-lasting memories in walking cats.



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