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Behavioral Core Protocols and Training

Balance Beam

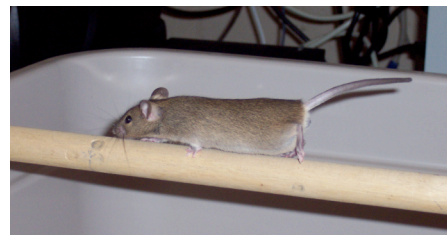
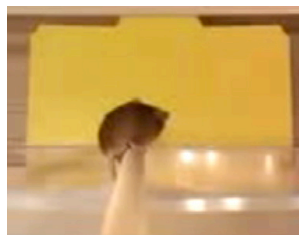
Basics

The balance beam is a test of motor coordination [1-4]. It is also a useful assay for sedation [5] and joint pathology [6]. Several beams are available. In general the round beams are harder than the square beams and the thinner the beam the harder the test. Choice of difficulty, as always, depends on empirical determination of control behavior for a given species, age, strain, sex etc.

This test can be more sensitive than rotarod for some types of motor coordination deficits [7-9].

Overview

The animals are first pre-trained across a plank. This helps to make sure that the behavior during testing is more stable and more accurately reflects motor coordination as opposed to the rodent's natural aversion to crossing over unprotected spaces. After the pre-training, the animals can be tested on the balance beam for the latency to cross the beam and the number of slips.



Procedure

Pre-training

Subject should be exposed to treats in the home cage (coco crispies for example, or other palatable food) for 2-5 days before pre-training to reduce neophobia. For mice 3 in wide plank is placed across the an open space (large storage tubs are suitable, and should be lined with foam or other cushioning to ensure that the animals do not injure themselves if they fall). The start side

should be very brightly lit and the end side should be dark, and ends in a hide in which the treats are placed. The animals should be allowed to cross the beam, with gentle guiding or prodding as needed, until they cross readily. This usually takes 1-4 trials.

Testing

The specific beam should be place across the time with the lights and hide as before. Number of slips and latency to cross are scored. You should be facing the back of the animal – primarily only the back paws slip. This can not be scored correctly when viewed from the side.

Variations

In some cases, the animals will never consistently cross the beam from one side to the other. In this case, the beam can be divided into segments, and the number of slips and time can be scored to cross a certain number of segments.

Note

It is almost impossible to film this consistently. It is impossible to film and score with any accuracy. Your only data are what you record manually.



References

Deficits in animal models of human diseases

[4, 6, 10-22]

Brain regional involvement

[9, 21, 23-31]

Comparison with other tests

[1, 2, 7, 8, 17, 32-35]

Other

[34, 36-42]

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