



CAMPDEN INSTRUMENTS LIMITED

INSTRUCTION MANUAL

FOR

RODENT STAIRCASE TEST

Model 80300 Rat and Model 80301 Mouse

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Rodent Motility Staircase Test.

Model 80300 Rat: designed for animals of 200 to 300g, has also been used up to 400g

Two width of plinth are supplied:

27mm plinth [Montoya et al] allows the animal to lick the first pellets. Provides motivation and can be applicable with older animals.

35mm plinth [Dunnett et al] allows skilled paw retrieval with younger animals.

Model 80301 Mouse: designed for animals of 20 to 25g, has also been used from 17g.

This simple apparatus provides an easy and efficient way to quantify bilateral skilled paw reaching.

Animals are placed inside the chamber and then must climb up onto the plinth to retrieve the food pellets. [BioServ-F0042 45mg sucrose for rat / F05550 20mg sucrose for mouse]. The size of this area is critical to the viability of the test, once on the plinth the animal should not be able to turn around or return to the first area.

Animals must reach down either side of the plinth to grasp, lift and so retrieve food pellets from the steps of the staircase.

No restraint or constriction of the contralateral limb movement is necessary to measure performance of the two sides separately. Staircase step height and well size are critical dimensions to measurement of the co-ordinated reach and grasp. For example striatal lesions have less effect on the actual distance of reaching than on the animal's ability to make a skilled grasp and retrieval.

The test is sensitive to unilateral lesions of the striatum, forebrain dopamine systems and sensorimotor cortex, as well as focal ischaemia. It has been adopted by several groups investigating the effects of unilateral lesions in the basal ganglia and motor system of the brain as it is sensitive to the effects of drugs and grafts.

Maintenance and Cleaning

All plastics are susceptible to solvents of some type depending on their chemistry. Therefore plastics should be carefully hand washed using only warm (less than 50°C) water to which a little detergent has been added.

Do not use solvents of any description. Note that many industrial and household cleaners e.g. Mr Muscle Multi Surface Cleaner etc. contain solvents such as ethanol and must not be used.

Do not dry using hot air blowers as the many warp the plastic by stress relief.

Training of Rodents for Paw reaching Skills Assessment in the Staircase Test

Training - 10 days to get stable results and about 20 to reach asymptote.

References.

Abrous & Dunnett 1994 Skilled paw reaching in rats: the staircase test *Neuroscience Protocols* 3: 1-11 (this is the Elsevier predecessor of *Brain Research Protocols*).

Jung-Kil Lee, Ji-Eun Kim, Michael Sivula, and Stephen M. Strittmatter

Nogo Receptor Antagonism Promotes Stroke Recovery by Enhancing Axonal Plasticity

Department of Neurology, Yale University School of Medicine, New Haven, Connecticut 06510

The Journal of Neuroscience, July 7, 2004 24(27):6209-6217 6209

R. A. Fricker-Gates, R. Smith, J. Muhith, and S. B. Dunnett
The Role of Pretraining on Skilled Forelimb Use in an Animal Model of Huntington's Disease
Brain Repair Group, School of Biosciences, Cardiff University, UK
Cell Transplantation, Vol. 12, pp. 257-264, 2003

A.L. Baird, A. Meldru, S. Dunnett.
The Staircase Test of Skilled Reaching in Mice
Brain Repair Group, School of Biosciences, Cardiff University, UK
Brain Research Bulletin volume 54 No 2 January 15, 2001

A list of known papers is available on the website for Dr Stephen Dunnett, originator of the Rodent Staircase Test and owner of the design copyright at:
<http://www.cf.ac.uk/biosi/research/neuroscience/staff/dunnett.html>