



STANDARD OPERATING PROCEDURE

TITLE: Cylinder Test

CATEGORY: Behavioral Assay

Introduction

Goal: This document aims to provide the reader information on how to conduct the Cylinder Test. The test is designed to evaluate locomotor asymmetry by observing forelimb activity during rearing against a wall of a clear arena. As this is a general description of standard materials, test settings, and procedures, variations may be made to fit specific needs.

Materials

- *Subjects:* any strain of rats or mice. No prior training is required, though subjects should be acclimated to testing environment and experimenter before testing.
- *Arena:* cylinder or home cage that is higher than subject during rearing or has cover to prevent subject from gripping top edge.
- *Mirrors:* placed in corner farthest from observer to provide full view of the arena.
- *Virkon:* used between trials to eliminate visual and olfactory residue in arena.

Test Settings

- *Test area:* no additional people in the room during testing.
- *Lighting:* sufficient light for observer or camera to view subject.

Detailed Standard Operating Procedure

Before testing:

- *Acclimation:* subjects in home cage are placed in testing room for at least 1hr before testing to minimize effects of stress on behavior during testing.
- *Subject training:* none required.

Testing procedures:

- Subject is placed alone in arena and allowed to explore arena freely.
- Subject is removed from arena and returned to home cage. Arena is cleaned with Virkon between trials.

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- Forelimb used during each rear is recorded as Left, Right, or Both. Rearing is defined by movement of forelimbs from ground to wall and back to the floor. Forelimb use is defined by placement of whole palm on wall of arena and may be broken down into forelimb use to launch into rear, during rear, or to land from rear, though generally recording first touch is sufficient. Five minutes of activity or total of 20 rears are recorded. (Note: rearing by walking up wall, i.e. placing one paw against wall immediately after other is considered Both.)

Data Analysis

- Asymmetry may be presented as a total percentage or ratio of use:
 $[(\text{Impaired paw} + \frac{1}{2} \text{ both paws}) / \text{Total rears}] * 100$

Example Cylinder Test Score Sheet

Study #:	Cylinder Test Group:	Date:
Test #:		Initials:

Animal ID#																					Sum
	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

	Left	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
	Right	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	Both	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	

TO = Timed out at 8 minutes
 NT=No touches