



# STANDARD OPERATING PROCEDURE

**TITLE: Activity Chamber**

**CATEGORY: Behavioral Assay**

## Introduction

**Goal:** This document aims to provide the reader information on how to conduct the Activity Chamber Test using the Activity Chamber apparatus by Med Associates. The Activity Chamber is a simple assessment test used to evaluate general activity levels, gross locomotor activity, and exploration habits in mice. Parameters collected include distance moved, time spent in pre-defined zones of the arena, average velocity, resting time, jumping movement, and ambulatory movement. 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 mice. No prior training is required, though subjects should be acclimated to testing environment and experimenter before testing.
- *Apparatus:* square arena (43.2 x 43.2cm) mounted with three planes of infrared detectors and within sound-attenuating chamber (66 x 55.9 x 55.9cm).
- *Software:* automated tracking system (ex. Med Associates Activity Chamber).
- *Light meter:* used to measure illumination in corners of apparatus.
- *Virkon:* used between trials to eliminate visual and olfactory residue in arena.

## **Test Settings**

- *Lighting:* approximately 30lux inside the chambers.

## 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.

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Testing procedures:

- Animal is placed in upper left corner and chamber door is closed. Animal is allowed to move freely for 10min and is monitored by automated tracking system. Trial begins immediately and ends when defined duration has elapsed.
- Animal is returned to home cage and arena is cleaned with Virkon between trials.

### Data Analysis

- The following parameters are collected for analysis:
  - Jump count & time
  - Mean velocity (see below)
  - Time spent in each zone (if multiple)
  - Total time (see below)
  - Ambulatory distance
  - Ambulatory count & time
  - Stereotypic count & time
  - Resting time
  - Vertical (rearing) count & time
- **Total time = Ambulatory + Stereotypic + Resting time**  
Make sure these times are converted into seconds.
- NOTE: If your arena is divided into zones, Jump time is counted twice and shows the same number in both zones. The machine is able to recognize when the animal jumps and breaks the Z plane, however, it is unable to recognize the jump location.)
- **Mean velocity = [Ambulatory Distance/(Ambulatory time + Stereotypic time)]**
- Zones may be user-defined based on specific area configuration. Standard is two zones, with periphery set as zone 0 and center set as zone 1.