

**SOP No:** AHT 47

**SUBJECT:** Open Field Test - Rats

**POLICY:** This technique may only be performed by operators skilled in the technique.

**PRECAUTIONS:**

**EQUIPMENT:** The Open Field is a circular arena with a diameter of 100cm and white plastic walls 30 cm high. The clear floor is divided up into grid lines 16cm x 16cm. Also, there is a central circle of 66cm diameter in the middle of the arena. The light levels at the middle of the arena (~90 lux) and the time of experiment must be noted in lab book. To facilitate tracking with Ethovision, only use uplights, not the fluorescent downlights which cause reflections. At all times during the experimental testing, the experimenter can watch the trial on a television while being in the same room, but removed from the immediate experimental area (behind a curtain screen or a door).

**PROCEDURE:**

Bring animals into room (with lighting levels as will be used in the experiment and doors shut) at least 30 mins before beginning experiment.  
Program the software (eg Ethovision®).  
Start recording, and identify subject with white board placed in front of camera for ~3 secs.  
Gently place animal in the centre of the field.  
Trials last for 10 minutes.  
At the end of each trial, remove the animal and thoroughly clean the arena with 70% alcohol solution, and dry with paper towelling.

Analysis: - can be made manually, or using ethological software (e.g) Ethovision (Noldus, The Netherlands)

Number of faecal boli produced in the trial (manually recorded at end of trial)  
Time taken to initially leave the inner circle  
Number of crossings into the inner circle, operationally defined as having all four paws in the inner circle.  
Amount of total time spent in inner circle

**Number of rears performed – this can be done on Ethovision but only with excellent tracking.  
Distance travelled (or number of squares entered if doing manually), operationally defined as having at least two paws in a square.**

**Assessments;**

**Greater faecal boli produced suggests anxious states.  
The quicker the retreat from the centre field suggests anxious state.  
Longer time spent in the outer field, the lower entries to centre field and the less rears performed suggests higher anxiety state.  
Lower distance travelled in centre field suggests higher anxiety states, however this also needs to be compared and contrasted to the TOTAL distance travelled (i.e. outer arena distance plus the inner distance travelled) as this may determine any sedative/hyperactive states (particularly that induced by pharmacological intervention.**

**Note; Protocol for mice essentially the same, except the dimensions of the arena may vary (i.e. smaller).**

**RECOMMENDATION**

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**REVISED:**

**REFERENCES**

1. Colman A.M (2001) "open-field test." *A Dictionary of Psychology.*. Encyclopedia.com.
2. Markel A.L , Galaktionov Y.K. and Efimov V.M (1989) Factor analysis of rat behavior in an open field test. *Neuroscience and Behavioral Physiology* 19:4, 279-286