Open Field NINGLA_OFD_001

Purpose

The Open Field test is used to assess anxiety and exploratory behaviors. It is based on the natural tendency of an animal to explore and to protect itself using avoidance which translates to a normal animal spending more time in the periphery of the Open Field arena than in the center (the most anxiogenic area).

Experimental Design

- **Minimum number of animals :** 7M + 7F
- **Age at test:** Week 52
- **Sex:** We would expect the results of this test to show sexual dimorphism

Procedure

1. Animals are transported to the testing room (or ideally an antechamber) and left undisturbed for 30 minutes before the test.
2. Ensure that lighting conditions are as desired (150-200 lux) and that all equipment is working correctly:

1. If using a beam break system, ensure that beams are not interrupted before putting the mouse and if measuring vertical activity (rears), check that height of the infrared frame for rears is correctly set.
2. If using a videotracking system, set detection parameters appropriate for the coat color of the mice.
3. For analysis, each openfield arena is divided into a peripheral zone measuring 8 cm from the edge of the arena walls, and a central zone around 40% of the total surface of the arena.

3. Testing is conducted during the light phase of the cycle with 1 hour gap from the light/dark change. Testing should be conducted during the same period of day.
4. Wipe the apparatus clean and allow time for it to dry
5. Each mouse is placed in the middle of a peripheral zone of the arena facing the wall and allowed to explore freely the apparatus, with the experimenter out of the animal's sight.

If more than one mouse can be tested in parallel, in adjacent open field arenas and mice are video-tracked, it is important to ensure that the tracking of each mouse starts as soon as the mouse is released to make data comparable.

Males and females must be run in separate tests; ideally males are tested first, then followed by females

6. At the end of the 20 min run, animals are labeled (if necessary) and put back into their home cage.
7. After each run, any feces are removed and the arena is thoroughly wiped.
8. Analysis of the recording is done to measure the activity of each mouse in each of the zones per 5 minute bins.

Notes

1. Please ensure that the mice are not handled prior to the test, except handling for cage change.
2. Ear clipping should be done after the test if necessary .

Data QC

1. Verify total time of run.
2. Coherence between latency, number of entries and time in the center; e.g. it is not possible to have zero entries and have spent some time spent in the center.

Parameters and Metadata

Periphery zone NINGLA_OFD_032_001 | v1.2

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Unit Measured: cm

Options: 9.39, 8, 7.6, 7.5, 7.9, 7.35,

Arena Size NINGLA_OFD_034_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Options: 42x42, 45x45, 50x50, 44.5x44.5, 44x44, 40x40, 40.5x40.5, 43.2x43.2,

Whole arena average speed series NINGLA_OFD_002_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm/s

Increments: 15, 10, 5, 20,

Equipment model NINGLA_OFD_025_001 | v1.0

procedureMetadata

Req. Analysis: true **Req. Upload:** true **Is Annotated:** false

Options: ActiMot / MoTil, LE8822, ActiMot / MoTil 480 x 480 mm, 2325-0248, MED-OFA-RS, Opto-Varimex 4, VMX 1.4b, TijmeOF9, Unknown, SuperFlex Fusion,

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Light beam barrier height (Z axis) NINGLA_OFD_049_001 | v1.1

procedureMetadata

Req. Analysis: true **Req. Upload:** false **Is Annotated:** false

Unit Measured: cm

Description: height of the Z axis light beam used to determine when mouse is rearing

Options: 6.8, 8.6, 8.0, 7.5,

Height of the wall NINGLA_OFD_030_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: cm

Experimenter ID NINGLA_OFD_035_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

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Central zone surface area NINGLA_OFD_026_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Unit Measured: % of total area

Options: 41, 39, 42, 40,

Disinfectant NINGLA_OFD_036_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Periphery average speed NINGLA_OFD_013_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm/s

Distance travelled NINGLA_OFD_005_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm

Increments: 10, 20, 5, 15,

Distance travelled - total NINGLA_OFD_020_001 | v1.2

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm

Derivation: sumOfIncrements('NINGLA_OFD_005_001', 4)

Equipment manufacturer NINGLA_OFD_024_001 | v1.1

procedureMetadata

Req. Analysis: true **Req. Upload:** true **Is Annotated:** false

Options: Accuscan, TSE Systems, Panlab, Biobserve, Noldus, San Diego, O'hara CO Ltd., Columbus Instruments, MED Associates Inc, Omnitech,

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Number of animals per cage NINGLA_OFD_028_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Type of analysis NINGLA_OFD_033_001 | v1.1

procedureMetadata

Req. Analysis: true **Req. Upload:** true **Is Annotated:** false

Options: Video tracking, Wide beam break,

Center permanence time NINGLA_OFD_016_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Center permanence time series NINGLA_OFD_046_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: s

Increments: 10, 15, 5, 20,

Latency to center entry NINGLA_OFD_018_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Whole arena average speed NINGLA_OFD_009_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm/s

Center average speed NINGLA_OFD_017_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm/s

Center average speed series NINGLA_OFD_047_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm/s

Increments: 10, 20, 5, 15,

Equipment ID NINGLA_OFD_023_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

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Number of rears - total NINGLA_OFD_021_001 | v1.3

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Derivation: sumOfIncrements('NINGLA_OFD_006_001', 4)

Periphery permanence time NINGLA_OFD_012_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Number of Rears NINGLA_OFD_006_001 | v1.1

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Increments: 10, 5, 15, 20,

Color of arena NINGLA_OFD_029_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Options: Transparent, Grey, Black, White,

Periphery distance travelled NINGLA_OFD_010_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm

Center distance travelled series NINGLA_OFD_044_001 | v1.3

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm

Increments: 20, 5, 15, 10,

Number of center entries NINGLA_OFD_019_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

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Center resting time series NINGLA_OFD_045_001 | v1.3

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: s

Increments: 10, 15, 20, 5,

Periphery distance travelled series NINGLA_OFD_003_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm

Increments: 10, 15, 5, 20,

Software Version NINGLA_OFD_039_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Options: TimeOFCR4, Opto-Varimex 4 AutoTrack System 4.97, Versamax 4.2, 06.15 / 07.01, TSE ActiMot Vers. 08.00, Actitrack system, Activity Monitor V6.02, Topscan Lite, Image OF, Ethovision XT v8.5, Fusion v6.3, Ethovision XT v15,

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Periphery permanence time series NINGLA_OFD_042_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: s

Increments: 5, 15, 20, 10,

Distance from light source: if direct illumination NINGLA_OFD_031_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Unit Measured: cm

Percentage center time NINGLA_OFD_022_001 | v1.2

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: %

Derivation: mul(div('NINGLA_OFD_016_001', 'NINGLA_OFD_008_001'), 100)

Whole arena permanence NINGLA_OFD_008_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Unit Measured: s

Whole arena resting time NINGLA_OFD_007_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Date equipment last calibrated NINGLA_OFD_041_001 | v1.2

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Center resting time NINGLA_OFD_015_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Arena ID NINGLA_OFD_038_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Periphery resting time series NINGLA_OFD_004_001 | v1.2

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: s

Increments: 5, 15, 10, 20,

Number of center entries series NINGLA_OFD_048_001 | v1.1

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Increments: 15, 20, 5, 10,

Whole arena resting time series NINGLA_OFD_001_001 | v1.1

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: s

Increments: 5, 20, 10, 15,

Periphery resting time NINGLA_OFD_011_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: s

Periphery average speed series NINGLA_OFD_043_001 | v1.3

seriesParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: cm/s

Increments: 5, 10, 15, 20,

Arena Material NINGLA_OFD_040_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Center distance travelled NINGLA_OFD_014_001 | v1.1

simpleParameter

Req. Analysis: false **Req. Upload:** true **Is Annotated:** true

Unit Measured: cm

Light intensity in the centre of the arena NINGLA_OFD_027_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** true **Is Annotated:** false

Unit Measured: Lux

Start Time NINGLA_OFD_037_001 | v1.1

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

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Percentage center movement time NINGLA_OFD_050_001 | v1.0

simpleParameter

Req. Analysis: false **Req. Upload:** false **Is Annotated:** true

Unit Measured: %

Description: percentage_center_movement_time

Derivation:
mul(div(sub('NINGLA_OFD_016_001', 'NINGLA_OFD_015_001'),'NINGLA_OFD_008_001'), 100)

Resting definition threshold NINGLA_OFD_051_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Parameter measuring how the equipment defines a 'resting' animal

Options: Stationary for > 1 second, Stationary for any time, Within grid for > 2 seconds,

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Rearing definition threshold NINGLA_OFD_052_001 | v1.0

procedureMetadata

Req. Analysis: false **Req. Upload:** false **Is Annotated:** false

Description: Parameter measuring how the equipment defines a 'rearing' animal

Options: No threshold, 1 second,