Open Field IMPC_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 9
- **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

Number of center entries IMPC_OFD_019_001 | v1.1

simpleParameter

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

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Arena Size IMPC_OFD_034_001 | v1.0

procedureMetadata

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

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

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Periphery average speed IMPC_OFD_013_001 | v1.1

simpleParameter

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

Unit Measured: cm/s

Distance from light source: if direct illumination IMPC_OFD_031_001 | v1.1

procedureMetadata

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

Unit Measured: cm

Center average speed series IMPC_OFD_047_001 | v1.2

seriesParameter

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

Unit Measured: cm/s

Increments: 5, 20, 10, 15,

Start Time IMPC_OFD_037_001 | v1.1

procedureMetadata

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

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Number of animals per cage IMPC_OFD_028_001 | v1.0

procedureMetadata

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

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Center distance travelled series IMPC_OFD_044_001 | v1.3

seriesParameter

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

Unit Measured: cm

Increments: 10, 5, 15, 20,

Periphery resting time series IMPC_OFD_004_001 | v1.2

seriesParameter

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

Unit Measured: s

Increments: 10, 20, 15, 5,

Center distance travelled IMPC_OFD_014_001 | v1.1

simpleParameter

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

Unit Measured: cm

Experimenter ID IMPC_OFD_035_001 | v1.1

procedureMetadata

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

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Number of rears - total IMPC_OFD_021_001 | v1.3

simpleParameter

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

Derivation: sumOfIncrements('IMPC_OFD_006_001', 4)

Software Version IMPC_OFD_039_001 | v1.0

procedureMetadata

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

Options: Actitrack system, Opto-Varimex 4 AutoTrack System 4.97, Activity Monitor V6.02, Image OF, TimeOFCR4, TSE ActiMot Vers. 08.00, Versamax 4.2, 06.15 / 07.01, Topscan Lite, Viewer3, Ethovision XT v8.5, Opto-Varimex AutoTrack 4.x, Opto-Varimex AutoTrack 5.x, Activity Monitor V7.0.5.10, Fusion v6.3, Ethovision XT v15,

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Periphery resting time IMPC_OFD_011_001 | v1.1

simpleParameter

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

Unit Measured: s

Center permanence time series IMPC_OFD_046_001 | v1.2

seriesParameter

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

Unit Measured: s

Increments: 15, 10, 20, 5,

Center resting time series IMPC_OFD_045_001 | v1.3

seriesParameter

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

Unit Measured: s

Increments: 5, 20, 15, 10,

Whole arena average speed IMPC_OFD_009_001 | v1.1

simpleParameter

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

Unit Measured: cm/s

Date equipment last calibrated IMPC_OFD_041_001 | v1.2

procedureMetadata

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

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Periphery permanence time series IMPC_OFD_042_001 | v1.2

seriesParameter

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

Unit Measured: s

Increments: 20, 10, 5, 15,

Whole arena permanence IMPC_OFD_008_001 | v1.1

simpleParameter

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

Unit Measured: s

Distance travelled - total IMPC_OFD_020_001 | v1.2

simpleParameter

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

Unit Measured: cm

Derivation: sumOfIncrements('IMPC_OFD_005_001', 4)

Center permanence time IMPC_OFD_016_001 | v1.1

simpleParameter

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

Unit Measured: s

Center resting time IMPC_OFD_015_001 | v1.1

simpleParameter

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

Unit Measured: s

Central zone surface area IMPC_OFD_026_001 | v1.1

procedureMetadata

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

Unit Measured: % of total area

Options: 41, 39, 40, 42,

Periphery distance travelled IMPC_OFD_010_001 | v1.1

simpleParameter

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

Unit Measured: cm

Equipment manufacturer IMPC_OFD_024_001 | v1.1

procedureMetadata

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

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

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Number of center entries series IMPC_OFD_048_001 | v1.1

seriesParameter

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

Increments: 20, 15, 10, 5,

Equipment ID IMPC_OFD_023_001 | v1.0

procedureMetadata

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

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Arena Material IMPC_OFD_040_001 | v1.0

procedureMetadata

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

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Type of analysis IMPC_OFD_033_001 | v1.1

procedureMetadata

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

Options: Video tracking, Wide beam break,

Whole arena resting time series IMPC_OFD_001_001 | v1.1

seriesParameter

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

Unit Measured: s

Increments: 15, 5, 20, 10,

Whole arena average speed series IMPC_OFD_002_001 | v1.2

seriesParameter

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

Unit Measured: cm/s

Increments: 15, 20, 5, 10,

Periphery zone IMPC_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, 7.35, 7.9,

Equipment model IMPC_OFD_025_001 | v1.0

procedureMetadata

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

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

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Periphery permanence time IMPC_OFD_012_001 | v1.1

simpleParameter

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

Unit Measured: s

Arena ID IMPC_OFD_038_001 | v1.0

procedureMetadata

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

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Light intensity in the centre of the arena IMPC_OFD_027_001 | v1.1

procedureMetadata

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

Unit Measured: Lux

Color of arena IMPC_OFD_029_001 | v1.0

procedureMetadata

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

Options: White (floor)/Dark grey(walls), Transparent, Grey, Black, White,

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Height of the wall IMPC_OFD_030_001 | v1.0

procedureMetadata

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

Unit Measured: cm

Number of Rears IMPC_OFD_006_001 | v1.1

seriesParameter

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

Increments: 20, 10, 5, 15,

Distance travelled IMPC_OFD_005_001 | v1.2

seriesParameter

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

Unit Measured: cm

Increments: 5, 10, 20, 15,

Disinfectant IMPC_OFD_036_001 | v1.1

procedureMetadata

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

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Periphery average speed series IMPC_OFD_043_001 | v1.3

seriesParameter

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

Unit Measured: cm/s

Increments: 15, 5, 20, 10,

Periphery distance travelled series IMPC_OFD_003_001 | v1.2

seriesParameter

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

Unit Measured: cm

Increments: 20, 10, 5, 15,

Center average speed IMPC_OFD_017_001 | v1.0

simpleParameter

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

Unit Measured: cm/s

Light beam barrier height (Z axis) IMPC_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: 8.6, 6.8, 8.0, 7.5,

Whole arena resting time IMPC_OFD_007_001 | v1.1

simpleParameter

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

Unit Measured: s

Latency to center entry IMPC_OFD_018_001 | v1.1

simpleParameter

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

Unit Measured: s

Percentage center time IMPC_OFD_022_001 | v1.2

simpleParameter

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

Unit Measured: %

Derivation: mul(div('IMPC_OFD_016_001', 'IMPC_OFD_008_001'), 100)

Percentage center movement time IMPC_OFD_050_001 | v1.0

simpleParameter

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

Unit Measured: %

Derivation:
mul(div(sub('IMPC_OFD_016_001', 'IMPC_OFD_015_001'),'IMPC_OFD_008_001'),100)

Resting definition threshold IMPC_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 IMPC_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,
