Version 1

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Protocol for Electronic von Frey V.1

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1 Works for me This protocol is published without a DOI.

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ABSTRACT

The electronic von Frey measures mechanical sensitivity and allodynia. This protocol outlines the procedure for assessing the mechanical sensitivity threshold in rats using the electronic von Frey.

PROTOCOL CITATION

Lani Tieu, Lauren Smith, Olivier George 2020. Protocol for Electronic von Frey. **protocols.io** https://protocols.io/view/protocol-for-electronic-von-frey-bh97j99n

KEYWORDS

Von Frey, mechanical allodynia, hyperalgesia, rats

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GUIDELINES

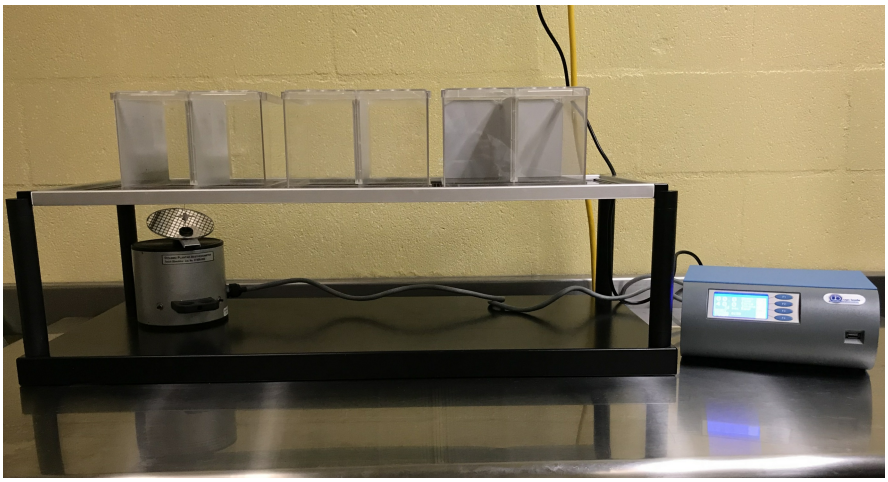
- Environment during testing must be quiet to reduce animals' stress
- Clean the clear boxes and metal grid with quatricide in between each set of animals

MATERIALS TEXT

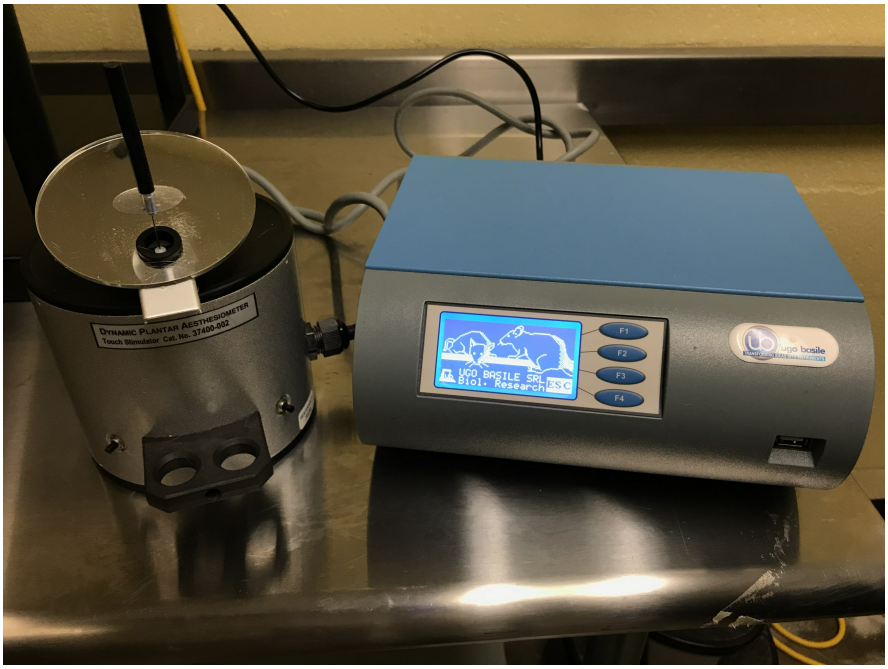
- Electronic von Frey apparatus (Ugo Basile® Dynamic Plantar Aesthesiometer 37450)
- Elevated horizontal grid
- Clear rat enclosures
- Quatricide (cleaner)
- Paper towels

BEFORE STARTING

Let the rats acclimate to the experimental room in their home cages for 1 hour.



Electronic von Frey setup



Von Frey touch stimulator and machine

Von Frey Setup 5m

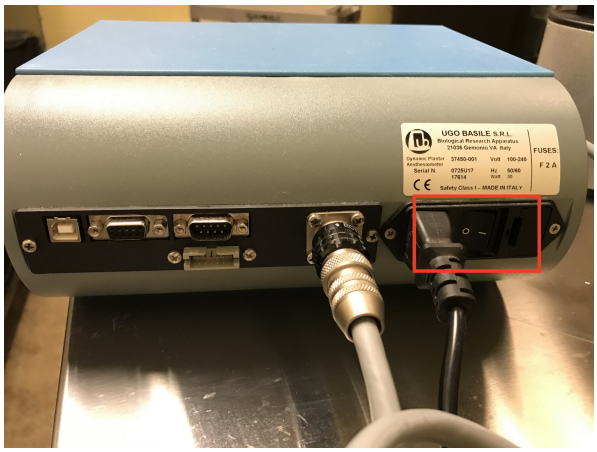
1 Remove metal grid and clear boxes off the elevated platform

2 Place touch stimulator on testing surface and remove the needle cap

3 Place the metal grid back on the legs making sure the grid does not touch the needle

4 Place the clear boxes back on top of the grid making sure the opaque sides are placed to prevent animals from seeing each other

5 Switch on the Ugo Basile® Dynamic Plantar Aesthesiometer 37450 machine



Power button located at the rear of machine

6 Press F4 ("ESC") once, then F1 twice ("OPR" then "TST") to display the testing screen

Testing screen

Testing

7 Remove the lid and carefully place one rat per clear box, then place the lids on

- Up to 6 animals can be tested at once
- If the animals are weighing down the grid causing it to touch the needle, take out 1 or 2 animals and test less animals at a time and spread them evenly across the grid
- The touch stimulator should move across the surface freely without the needle touching the grid while testing a set of animals

8 Allow rats to habituate in the clear boxes for 10 minutes

9 Measure the left hind paw first, then the right hind paw for the first animal

9.1 Position the needle under the center of the hind paw, then press the button on the touch stimulator to begin the force measurement

Make sure the needle goes through the net and actually touches the paw.

Black dots indicate testing area. Avoid the testing the pads (bumps).

9.2 When paw withdrawal occurs due to pain, the needle will retract and the **force** and **time** will display on the machine. Record these measurements.

The animal must be still during the application of the needle tip.

9.3 Continue measuring each paw for one animal, move on to the next animal, and so on until you have completed all the animals in your group. That is Trial 1. Then move on to Trial 2, and Trial 3. Once you have 3 Trials you are done.

If an animal is walking or moving not because of pain, move on to the next animal and come back to it later.

10 After testing is complete, return animals to home cages

11 Clean the clear boxes and grid before testing another set of animals.

Cleanup

12 Clean all parts of the electronic von Frey (boxes, grid, needle) and make sure to recap the delicate von Frey needle.