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# O Advanced Dynamic Weight Bearing system for mice

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Protocol status: Working We use this protocol and it's working

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# Abstract

We can assess spontaneous limb pain-like behaviors using advanced DWB apparatus, wherein changes in the postural equilibrium of each freely moving animal were tracked and analyzed. This protocol outlines the procedures from calibration to data analysis.



## Materials

PC



Advanced DWB apparatus (Bioseb, Vitrolles, Provence-Alpes-Côte D'Azur, France; catalog number: BIO-DWB-M)



We made the apparatus a hat to reduce the reflection of room light.

3000mL water



# Before start

Install the DWB software set (drivers for digital USB camera, driver for PC/sensor interface, video codec, advanced DWB software).

# Calibration

1

Note

A calibration must be performed before experiment.

Connect the sensor and the camera to the PC.



2 Lauch the software and select the sensor type "Mice". Click "Full calibration".



Enter the calibration weight, then click "Next". For mice, 2000-3000g is preferred, and 7000-10000g for rats

Adjust the display angle of the sensor to match the real sensor direction by clicking "<" or ">" on the top.

Make sure no weight is on the sensor and click "Tare".



Click "Gain preview", and apply the calibration weight (3000g) indirectly on the sensor.



	1- You have to make the tare of the sensor clicking on "Tare".
	2- Click on "Gain preview to display the sensor answer.
	3-When the sensor is correctly sollicited click on "Gain definition". Wait a few second, then the gain is defined and you ca click on "next".
	Calibration indicator 90.18

Follow the guidance on the right.

# Acquisition setting

4



Embed the sensor in the floor of the chamber.



New       Capture       Stop       Analyse       Part time :       Total time :         Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop         Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop         Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop         Image: Stop	New       Capture       Stop       Analyse       Part time :       Total time :         Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop       Image: Stop         Image: Stop       I	Menu	Options	Calibration	Video	?	_		
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Click "New" to create a new experiment project. Click "Browse..." and select the calibration file that is previously saved. Click "Tare and Mask".

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Follow the guidance on the right.

6 Click "Next".

Click "Video setting" to make sure that the DWB software is connected to the digital camera, not WebCam of the PC. Click "OK".

## Data acquisition

Place the mouse in the chamber.
Adjust the camera aperture and focus to get a bright and clear image.
Click "Capture" to lauch the acquisition.
Input the weight and click "OK".

2m

	Note	
	We suggest to tick " Experiment automation" to schedule the acquisition automatically.	
	Animal weight configuration	
	Experiment automation   Number of records :   1   Record time (min) :   5   Time beetween records (min) :   1   Latency (s):   60   Total time (min) :	
	Weigth (g) 20 OK Latency = 60ses: 1min for acclimatization before the recording. Record time= 5min: We record 5min for each mouse.	
	The mouse is allowed to move freely in the chamber and changes in postural equilibrium were synchronously and automatically tracked and analyzed by the software.	
8	When the capturing is over, click "analysis" and compress the data file. Place the mouse back to its cage and clean the chamber before the placement of next mouse.	1
Data	a analysis	8
9	Click "Menu"→"Open experiment file" Manually validate each automatically presumed paw position to avoid error identification afterward.	6



Tick "Independent paws setting" and "Go through validation".

We suggest to choose "never" make a backup during validation as it takes time to save the file.



Click "Legend" to help validating each paw position.

-Paws legend	nt pavis (E)
	•
RL (Q)	RR (5)
Ignored (X)	Others(W)
-Time legend	Segment
Ignored	Validated

### Note

A zone was considered valid when the following parameters were detected:  $\geq 0.8$  g on one captor with a minimum of two adjacent captors recording  $\geq 1.0$  g. A time segment was considered valid if  $\geq 3$  stable pictures were detected.

#### Opt 4 1 Menu Results × (-1)16/07/2020 09:55 13\_Part1 Period (s) FL weight FR weight FGrouped weight RL weight RR weight Front Rear paws weight Other FL surface FR surface FGr veight (g) (mm<sup>2</sup>) (mm<sup>2</sup>) face RLs Start (g) right (g) 8.42 2.83 2.02 2.92 Mean over time 5.41 0.18 19 1.60 Mean over seg 5.78 2.84 0.08 8.70 19 2.20 3,11 1.67 Variability mean 0.07 0.04 0.00 0.00 Time (s) 107.74 59.48 35.09 2.71 84.29 108 31.56 Animal wei 30.00 00:00:84 0.48 5.26 18.63 0.00 4.22 5.91 0.00 24 0.00 0.00 00:01:80 0.38 6.44 0.00 6.44 3.38 0.00 00:02:41 2.80 8.13 0.00 8.13 22 0.00 4.34 0.00 0.00 Display options Analysis period (s) : 10 G Filter : Al states Display variability Movement % Display Graphics Advanced filter Export ... Vie Preview Si Validate Fusion Unvalid Legend 🔿 Small Ignore Div ide -Exp riment -Options-04:28.07 Easy scoring Results Save 🔘 total Go through validation Validable time : 01:47:74 O partial Parameters Sensor : No sensor connected: replay mode.

## 10 After validation, click "Result".



## Click "Graphics" to visualize the results.

