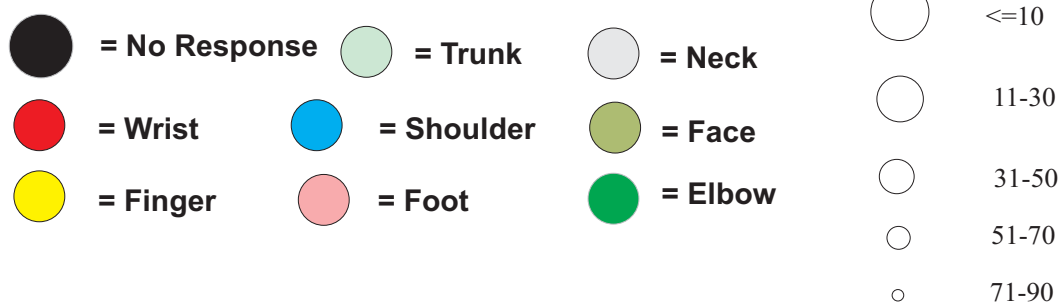
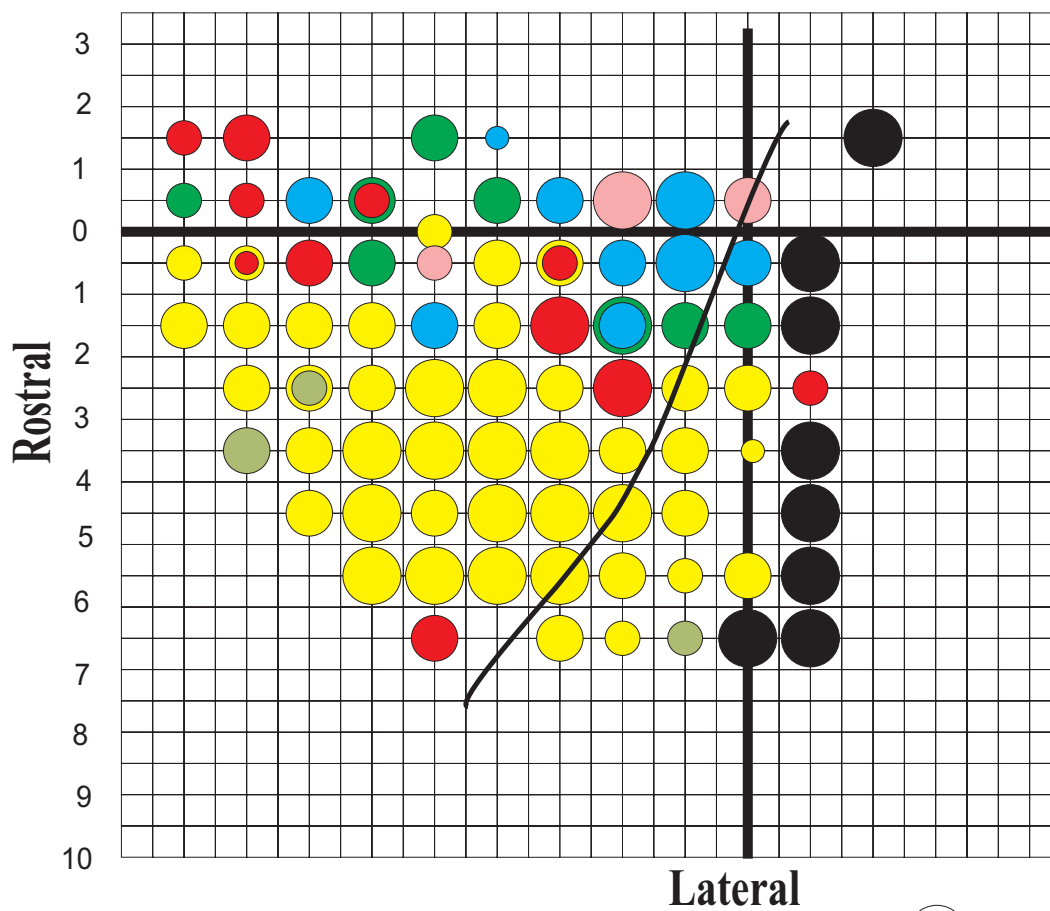
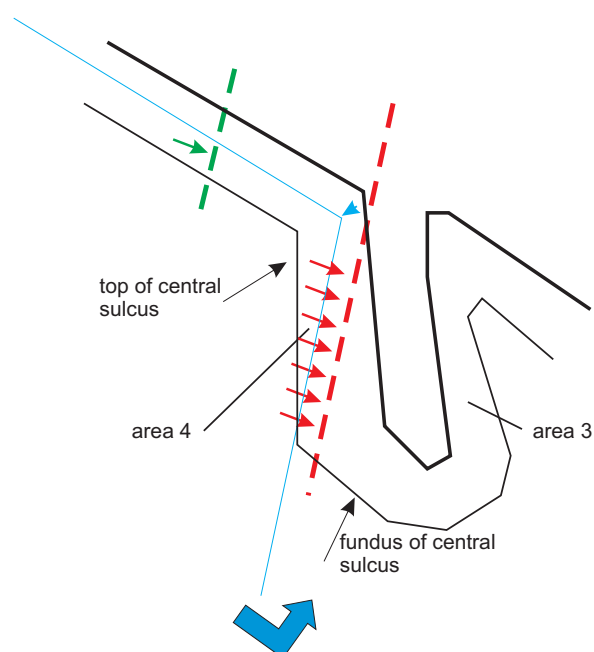


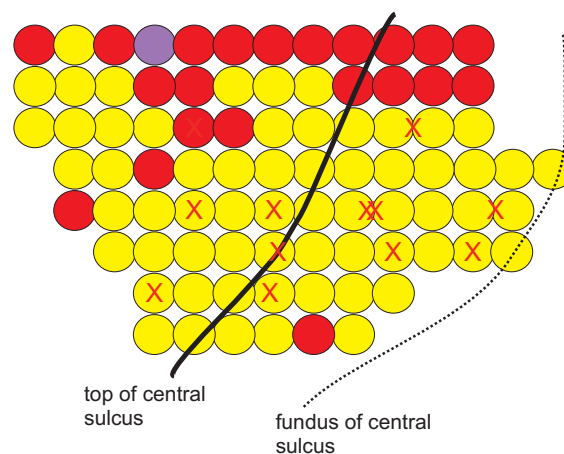
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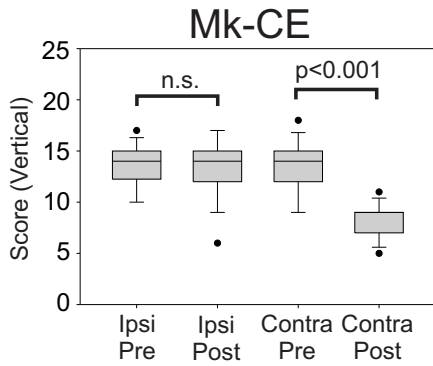
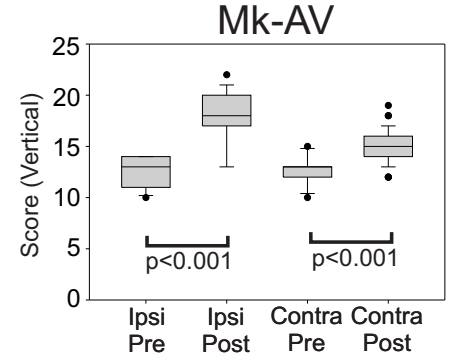
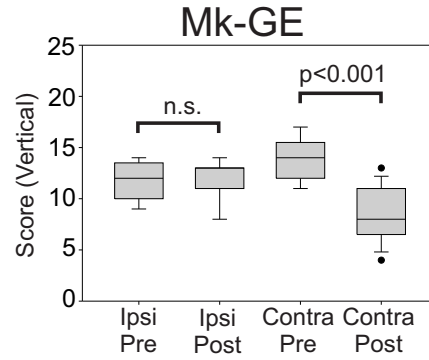
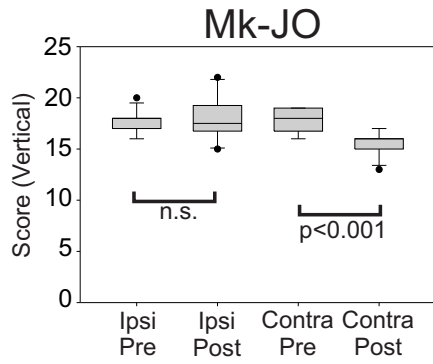
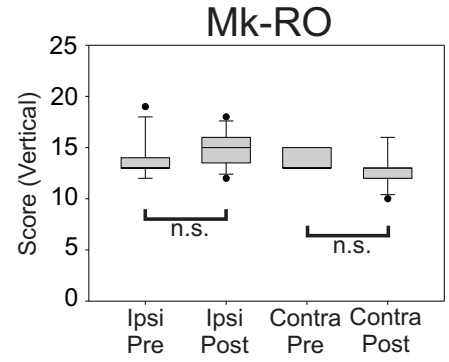
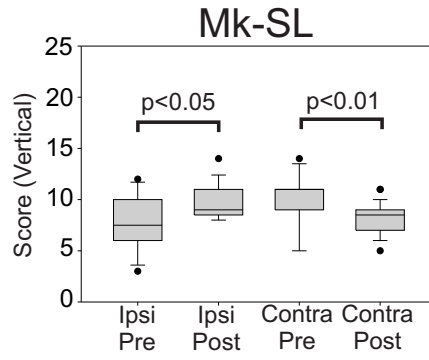
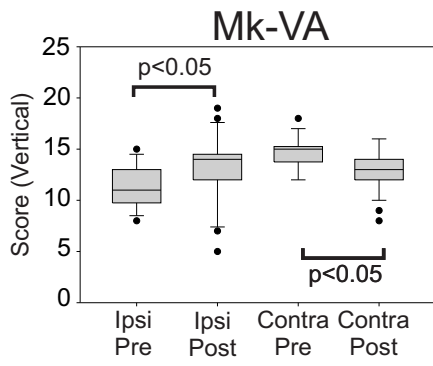
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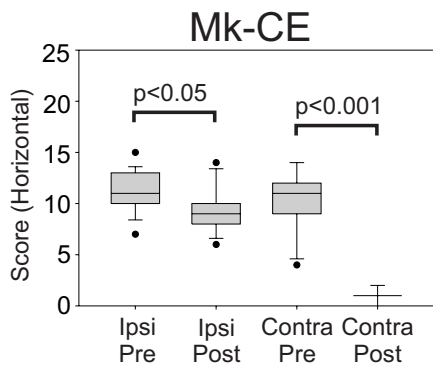
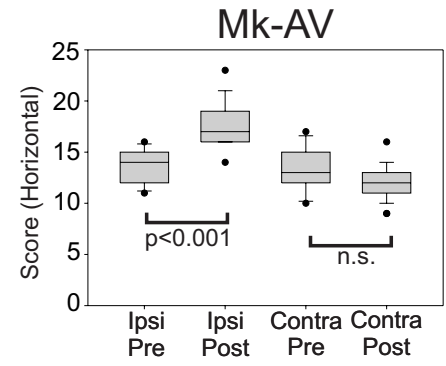
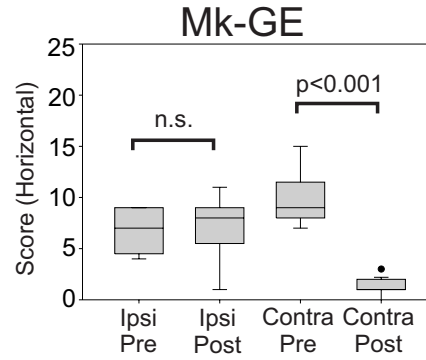
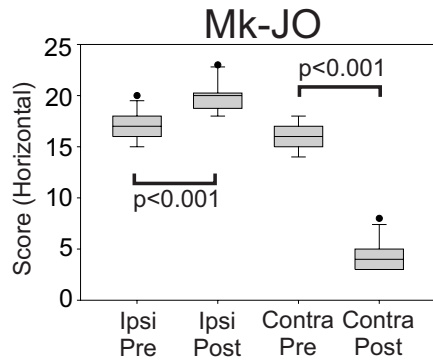
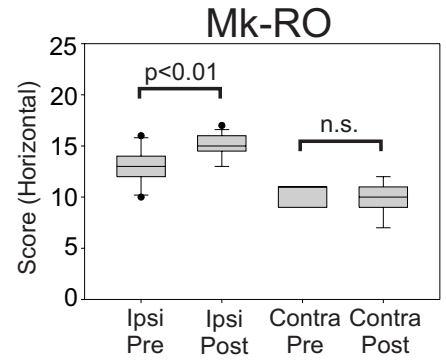
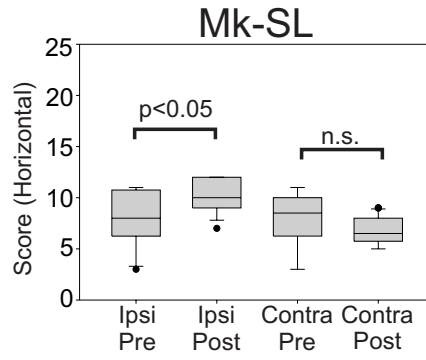
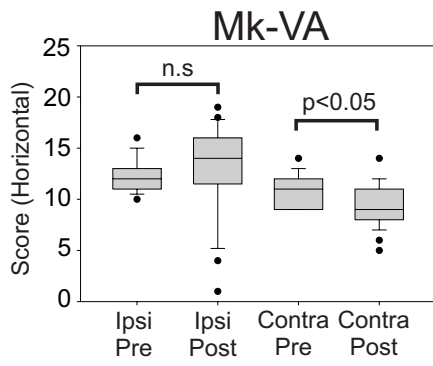
C



Suppl. Fig. 1



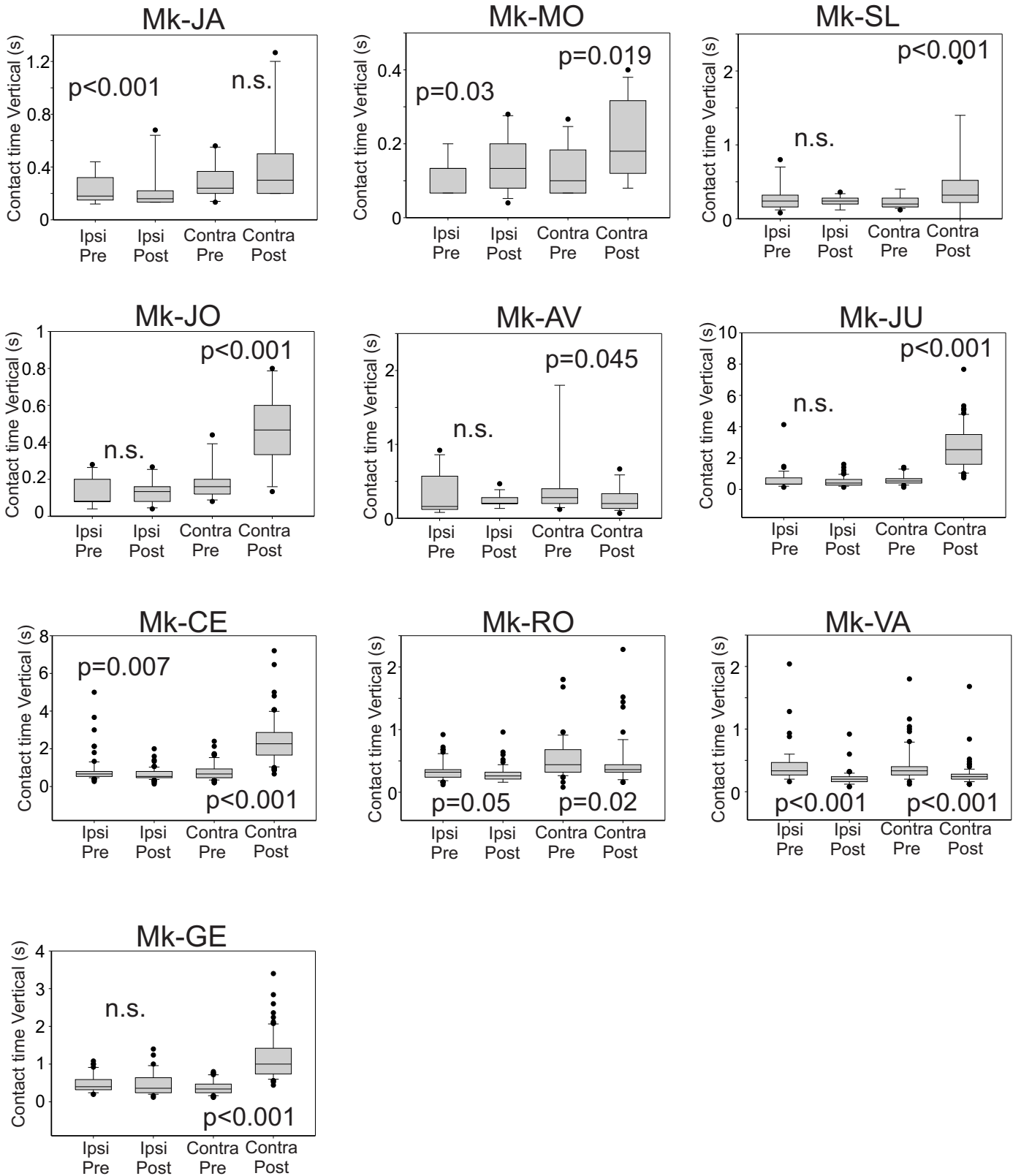
Suppl. Figure 2



Suppl. Figure 3

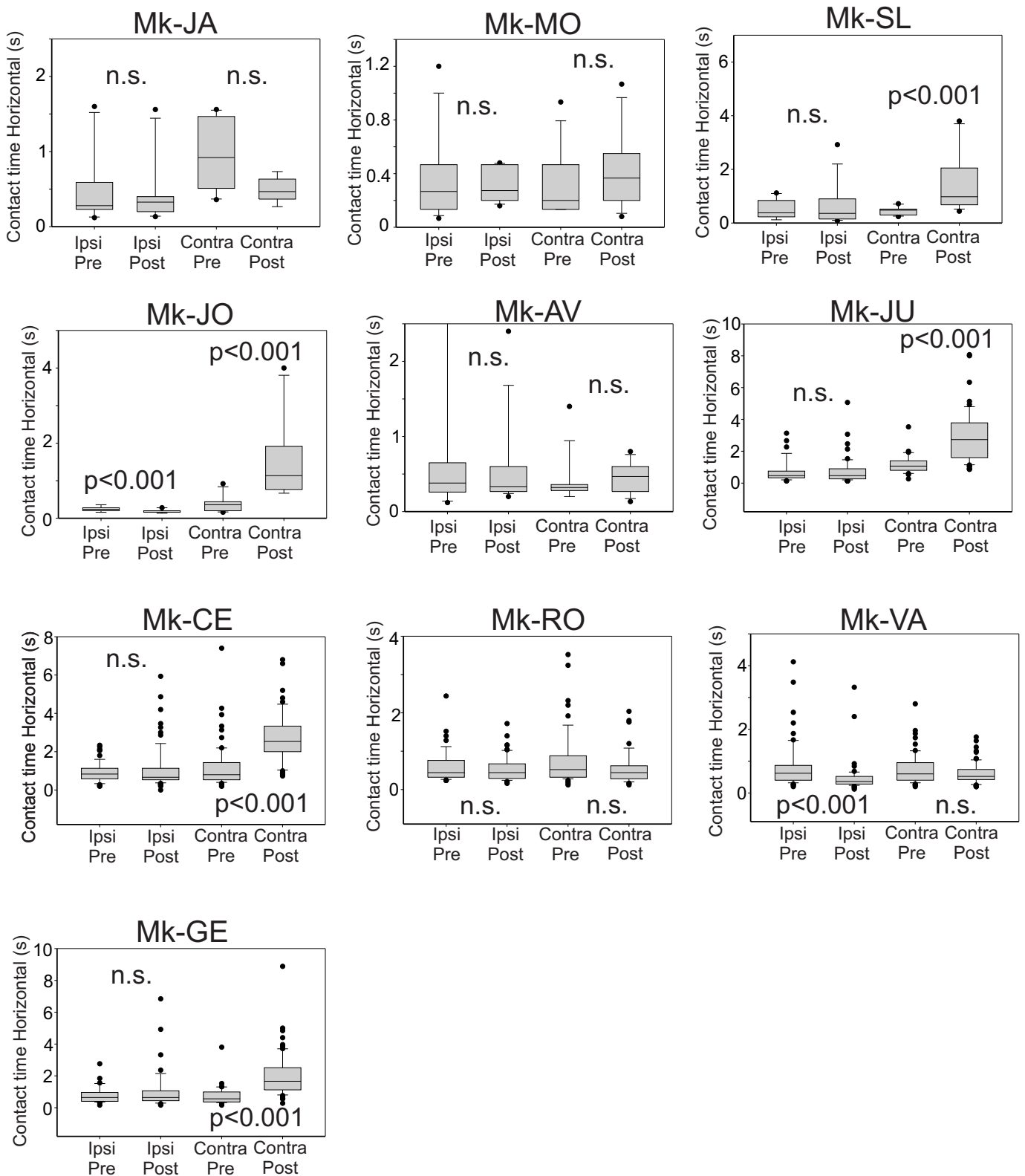
# Modified Brinkman board - contact time

## First five vertical slots (long-term)



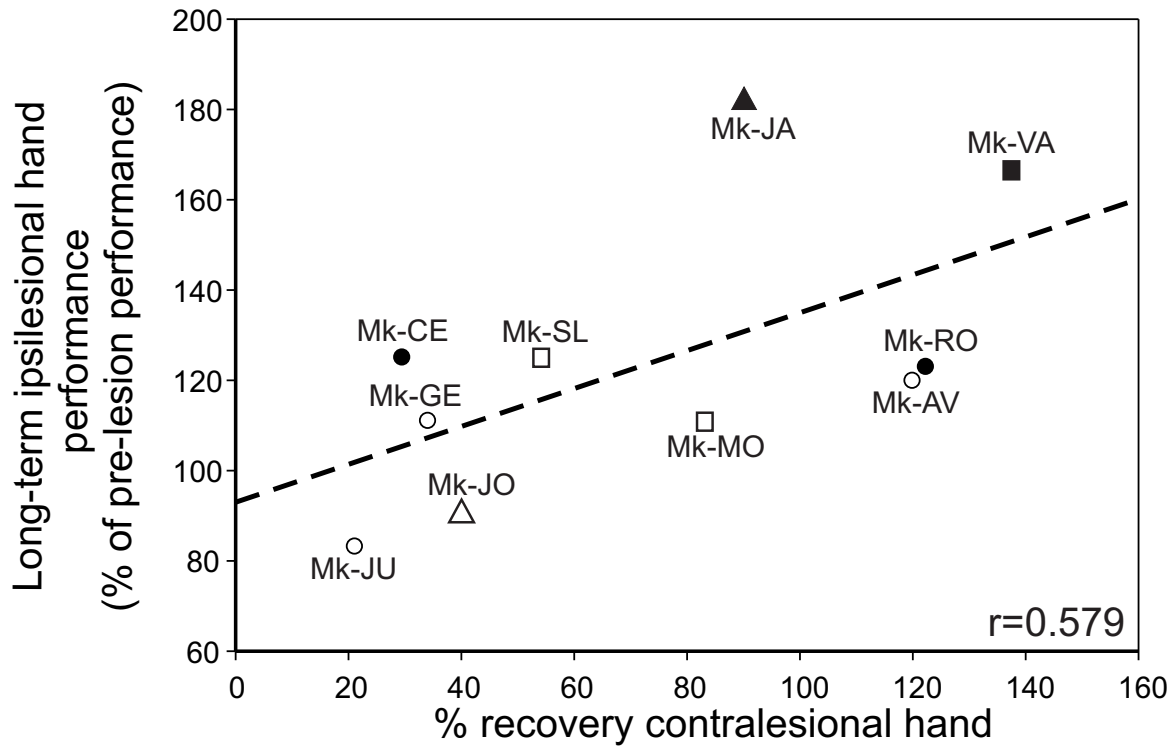
# Modified Brinkman board - contact time

## First five horizontal slots (long-term)

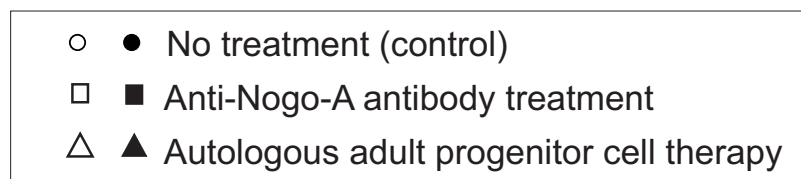
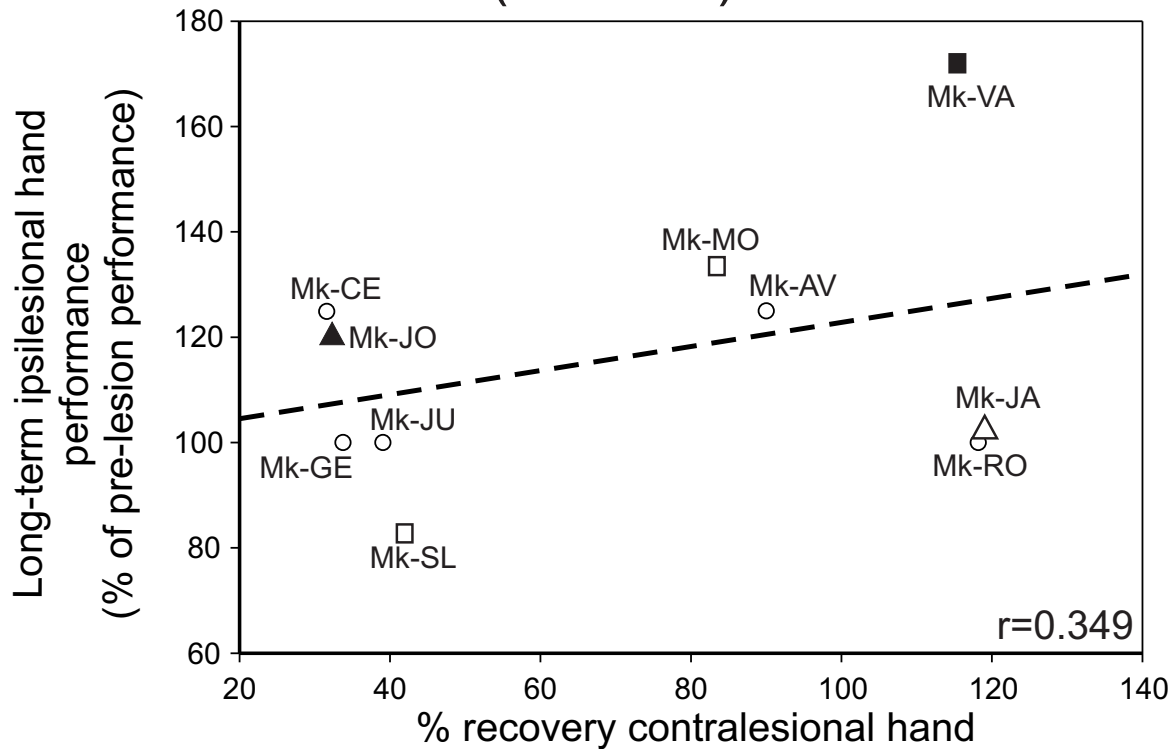


Suppl. Figure 5

## Contact Time (first five) Vertical slots



## Contact Time (first five) Horizontal slots



### Supplementary Figure 1

A: Intracortical microstimulation (ICMS) map in Mk-SL as seen from the surface, in which each circular symbol represents the site of each electrode penetration. The black curve represents the approximate location of the central sulcus. The size of the circles indicates the lowest ICMS threshold (in microAmps) obtained along the corresponding electrode penetration (see table on the bottom right of the panel). The color of the circles represents the body region where the ICMS at threshold elicited a movement on the contralateral side. Finger movements were obtained at the lowest threshold along the electrode penetrations depicted in yellow. The grid (in mm) represents the coordinate system used in the chamber that was chronically implanted in the left hemisphere to register the rostro-caudal and medio-lateral positions of the electrode penetrations (separated by 1 mm from each others).

B: On the surface map shown in panel A, the electrode penetration represented by the dashed green line is represented by a single circle, as the electrode penetration is perpendicular to the cortical layer (only one ICMS site with a low threshold, in principle at the depth corresponding to layer V: green arrow). The electrode penetration represented by the dashed red line is also represented on the surface by a single circle (in panel A), although the penetration is roughly parallel to the cortical layers in the rostral bank of the central sulcus. As a consequence, the surface map does not show the multiple ICMS sites where low threshold can be obtained (red arrows), where the electrode tip is close to corticospinal neurons in layer V. In order to generate a more complete representation of the hand area in the motor cortex, the rostral bank of the central sulcus was “unfolded”, with a rotation to the right (thick blue arrow) using the top of the central sulcus as axis of rotation (small blue arrow). As a consequence, each ICMS site along the penetration represented by the red dashed line appears on the unfolded map, yielding a more realistic extent for the hand area (yellow circles in panel C). The thin blue line indicates the general orientation of the cortical layers, switching from horizontal to roughly vertical in the rostral bank of the central sulcus.

C: In the unfolded map, ICMS sites eliciting a movement at 30 microAmps of stimulation are represented (as a consequence all symbols have the same size). The red crosses are for the ICMS sites selected for ibotenic acid infusion, corresponding to the sites where low thresholds were observed (usually below 10 microAmps). When two adjacent ICMS sites (separated by 1 mm) had the same threshold, the ibotenic acid was injected at a depth in between these 2 sites. Two adjacent sites of infusion (crosses next to each other) on the map are actually

separated along the rostra-caudal axis by 1 mm. The black curve shows the approximate location of the central sulcus, whereas the dashed black curve shows the approximate location of the fundus of the central sulcus.

#### Supplementary Figure 2

Same data as in Figure 3 (7 monkeys) but the number of pellets retrieved (score) is considered for the vertical slots only. Same conventions as in Figure 2B.

#### Supplementary Figure 3

Same data as in Figure 3 (7 monkeys) but the number of pellets retrieved (score) is considered for the horizontal slots only. Same conventions as in Figure 2B.

#### Supplementary Figure 4

Contact time data for the ten monkeys involved in the study, derived from the first five vertical slots visited by the monkey. The data are presented in the form of box and whisker plots (see legend of Fig. 2), showing the distribution of contact times obtained from the ipsilesional hand (ipsi) or the contralesional hand (contra), pre-lesion (pre) or post-lesion (post), respectively. The statistics are for the comparison of pre- versus post-lesion contact times for each hand (Mann and Whitney test). Short contact time means good manual dexterity.

#### Supplementary Figure 5

Contact time data for the ten monkeys involved in the study, derived from the first five horizontal slots visited by the monkey. Same conventions as in Supplementary Figure 4.

#### Supplementary Figure 6

Correlation between long-term post-lesional ipsilesional contact time and % of recovery of contact time of the contralesional hand for the two slots orientations (vertical and horizontal). The different symbols distinguish the three subgroups of monkeys. Filled symbols are for the monkeys exhibiting a significant long-term enhancement of the manual performance (contact time) of the ipsilesional hand, whereas there was no enhancement of contact time in the monkeys represented by open symbols.