Supplementary Materials

Part I. Timeline of learning gains

To follow up from the Generalised Estimating Equation (GEE) analyses presented in the main text, and characterise the timeline of learning for the individual fingers, we employed an exploratory “time to learn” analysis (Dempsey Jones et al., 2015). This analysis determines how long it took for each finger to significantly improve in threshold with respect to its baseline. Paired-sample t-tests were used to compare the baseline threshold to the next time point. If this was non-significant, the subsequent session was compared to baseline, until a significant difference was identified. Given the descriptive nature of this analysis, an uncorrected alpha value was used (p = 0.05) and interpretations were cautious. Only fingers that were identified as having a significant main effect of Finger in the two-way GEE analyses (see main text) were followed up with the time to learn analysis – as these were the only fingers were there was a statistically verifiable change from in thresholds across sessions.

Block only group

The two-way GEE of the block only group (Finger x Session) revealed a significant main effect of the right middle finger only (see main text). Using the time to learn analysis, we found that the threshold of the right middle finger improved at the retention test (p = .006), though it was already trending towards improvement at the offline test (p = .096). This analysis suggests that the behavioural effects of temporary deafferentation may emerge and develop over the course of a few days.

Block+train group

For the block+train group, the two-way GEE (Finger x Session) revealed five from six fingers tested showed a significant main effect of Finger (see main text). These were the right index, right middle, right ring, left middle and left ring
fingers (with no learning in the left index finger only). Once again, to probe the
time-course of these learning gains, we performed the time to learn analysis for
each of the fingers that showed a main effect of learning in the analysis above.
We found that the homologous left middle finger had already improved when
tested during the online test ($p = .004$). The trained right middle finger ($p = .002$), right ring finger ($p = .017$), and left ring finger ($p = .028$) had significantly
learned by the offline test. The deafferented right index finger (adjacent to the
trained finger) only showed significant learning by the final retention test ($p = .008$). This final result suggests that the consequences of training on the
deafferented finger could only be reliably observed several days following the
training and blocking interventions.

**Sham+train group**

As there were no significant main effects of Finger (i.e., no threshold values that
differed significantly from each other, see main text), the time to learn analysis
was not performed for the sham+train group.
Part II. Non-normalised results supplemental figure

A. Block only group

B. Block+train group

C. Sham+train group
**Supplemental Figure.** Change of tactile sensory thresholds over testing sessions in the three groups: **A. Block only** (i.e., ‘direct’ effects of deafferentation, top), **B. Block+train** (i.e., ‘indirect’ effects of deafferentation, middle) and **C. Sham+train** (training only control, bottom). Fingers that changed significantly in threshold (‘thresh.’) over time (i.e. significant main effect of Finger, see GEE results in Table 1) are represented by solid, coloured bars and an asterisk (e.g., the right middle finger of the block only group, in red). Dashed lines are used for fingers that showed a trend to change over time, while fingers that did not change over time are represented in grey. Error bars represent the within-participants standard error of the mean (SEM) (Cousineau, 2005). Improvement in perception is reflected in a drop in grating orientation threshold (lower numbers). Grey circle marked with ‘inj’ denotes the injected finger (sham or real block, depending on group) and the white circle marked ‘T’ denotes the trained finger. **Please note:** the threshold for the right index finger is not represented for the period during which it was anaesthetised (i.e. at the online test) for the block only and block+train groups (note also that it was not included in the GEE or t-test analyses, see in text for more details).