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**SUPPORTING FIGURES**

**EFFECTS OF A FINGER TAPPING FATIGUING TASK ON M1-INTRACORTICAL INHIBITION AND CENTRAL DRIVE TO THE MUSCLE**

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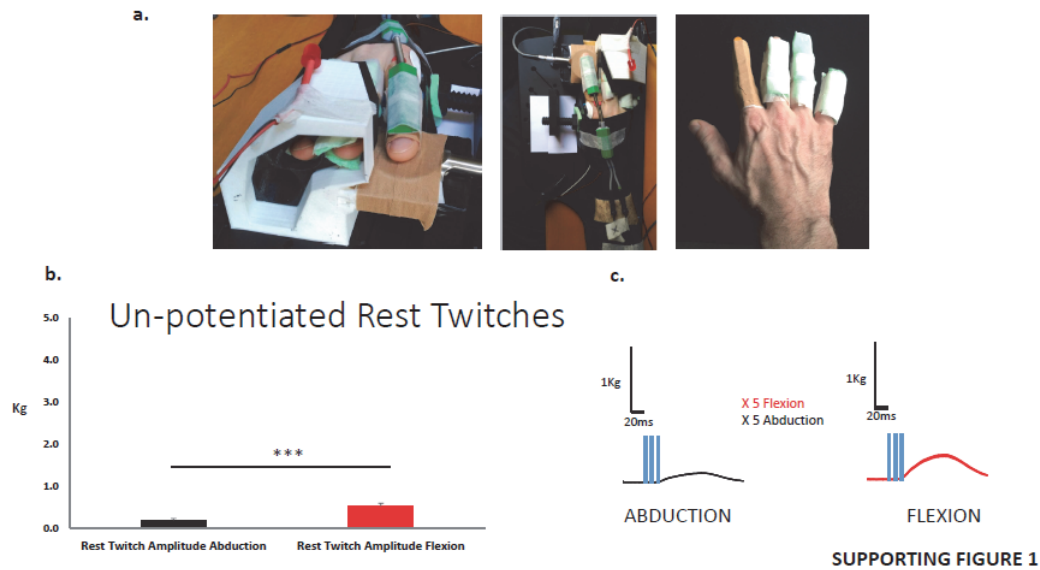
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12 **Supporting Figures**

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3D FIXATION SYSTEM AND PRELIMINARY EXPERIMENT



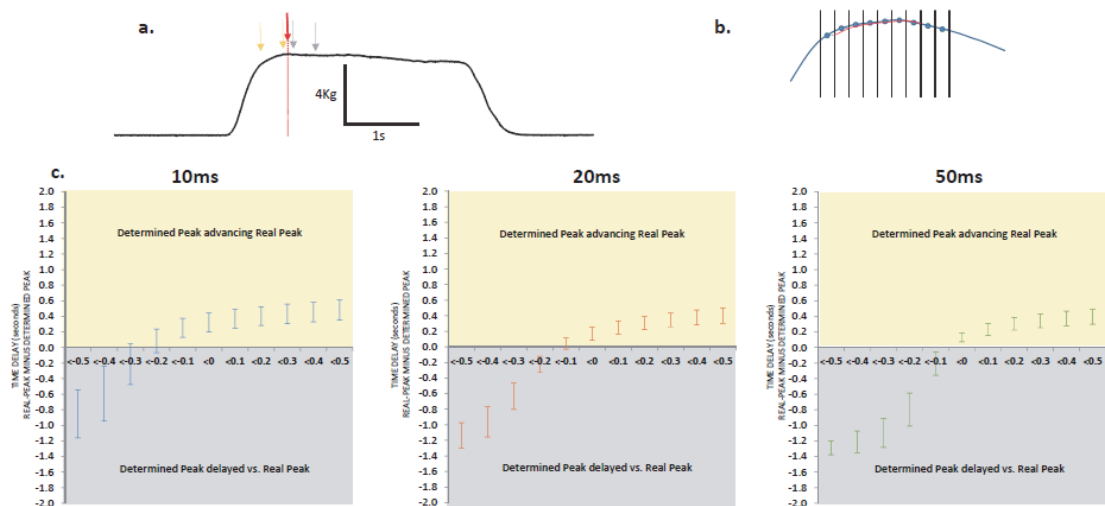
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15 **Supporting Fig 1.** 3D-fixation system setup and force induced by percutaneous ulnar nerve  
16 stimulation in the un-potentiated resting muscle

17 **a)** The 3D-fixation system secured the subjects' dominant hands. The forearm was resting on  
18 the system with the palm of the hand on a fixation anatomical support (with the wrist slightly  
19 extended,  $\approx 25^\circ$ ). The thumb was abducted and its metacarpal bone secured and immobilized  
20 with the help of the system screw. The 3<sup>rd</sup> to 5<sup>th</sup> fingers were introduced and immobilized in  
21 another segment of the system, and straps were used to secure the dorsal side of the hand as  
22 well as the wrist and forearm. A dynamometer (P200 Biometrics Ltd) was adapted and secured  
23 to the system, placed flat underneath the distal phalange of the index finger in the main  
24 experiments. The index finger was free to move around the metacarpophalangeal joint (at  
25 rest, in touch with the dynamometer, it was flexed  $\approx 45^\circ$ ), but its interphalangeal joints were  
26 immobilized with a finger splint. In preliminary sessions, the dynamometer was also placed  
27 and secured in a vertical position (see Supporting Sketch Drawings). This way the  
28 dynamometer was in contact with the lateral side of the distal phalange of the index finger. In  
29 the preliminary session, five supramaximal PNS triplets were delivered with the dynamometer  
30 in each position. In the preliminary session, it was clear that the stimulation produced a  
31 prominent force towards flexion (significantly greater than abduction,  $t_{10}=9.9$   $p<0.001$ ). This is  
32 shown for all subjects (**b**) and for a representative participant (**c**) (the 5 traces are overdrawn;  
33 the blue vertical lines represent PNS). This constituted a basic pre-requisite to use the setup  
34 for testing the VA in our main experiments.

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## TRIGGER AT MVC<sub>PEAK-PLATEAU</sub> VALIDATION



SUPPORTING FIGURE 2

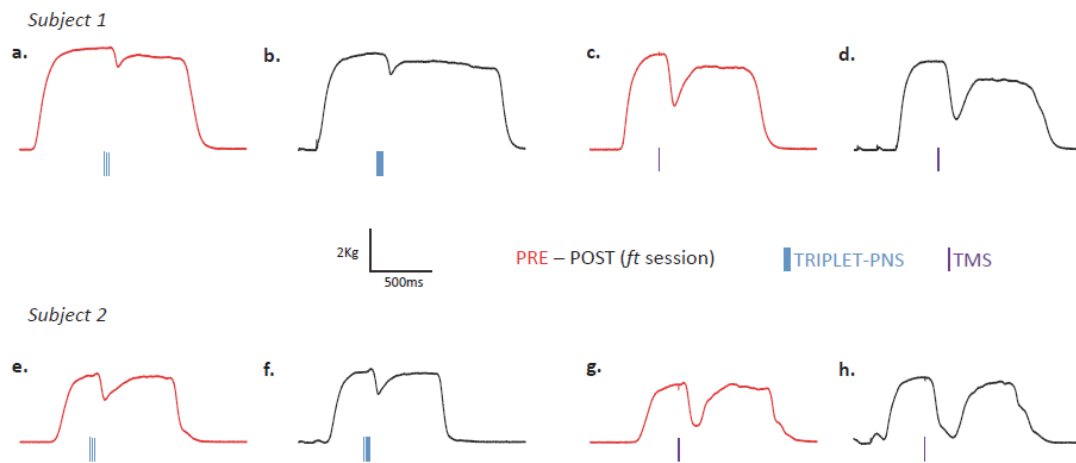
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37 **Supporting Fig 2.** Preliminary Validation of algorithms to trigger stimulation at MVC peak-  
 38 plateau

39 Subjects executed 15 MVCs of 3 seconds without stimulation with one minute rest. Across  
 40 subjects, the sequence of MVC produced a mean reduction in force of approximately 30% to  
 41 the 71.3% (SE 2.3) of the maximal MVC force. **a.)** MVC peaks were obtained *off-line* and saved  
 42 as *gold-standard* (red arrow in the example) to compare MVC<sub>peak</sub> determinations of different  
 43 algorithms (the yellow arrows are examples of determinations advancing the *gold standard*;  
 44 grey arrows delayed from the *gold standard*). Algorithms determined peaks *on-line* when the  
 45 slope of the ongoing force signal was below  $m$  with bins ( $b$ ) of 10, 20, and 50 ms to calculate it.  
 46 **b)** For a bin of 10 ms (black vertical thin lines), the algorithm calculated the mean value of the  
 47 force for that bin and stored it ( $b_x$ ), doing the same operation 10 ms after ( $b_{x+10ms}$ ) (blue dots).  
 48 Next, a line intercepting the values  $b_x$  and  $b_{x+10ms}$  at the end of the corresponding bin was  
 49 determined, and its slope calculated (red solid lines); when the slope was below  $m$ , the  
 50 algorithm considered that the peak of force was reached. At this point, stimulation would be  
 51 delivered. A threshold was set to apply the algorithm only above certain levels of force; this  
 52 was done to avoid the computation of force values corresponding to *ft*. **c)** Different  
 53 combinations of  $m=[<-0.5,<0.5]$  with 0.1 increments (abscise axis), and  $b=10, 20$  and 50 ms  
 54 were checked (one plot for each  $b$ , from left to right). We calculated the variable “time of gold-  
 55 standard MVC<sub>peak</sub> minus time of estimated MVC<sub>peak</sub>” considering all MVC and subjects, and the  
 56 95% confidence interval (CI) of the mean of the differences was computed. To be used in main  
 57 EB, we selected the combination of  $m$  and  $b$  yielding the narrowest 95% CI containing 0; this  
 58 means no significant difference between real and determined peaks. These were  $m=[<-0.1]$   
 59  $b=[20\text{ ms}]$ .

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## EXAMPLES OF TRIGGER AT MVC<sub>PEAK-PLATEAU</sub>



SUPPORTING FIGURE 3

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62 **Supporting Fig 3.** *Examples of stimulation at MVC peak-plateau in the main experiments*

63 Examples of force recordings during MVC (*pre* in red and *post* in black) in two different  
64 subjects (upper and lower traces). For each subject, the *pre* and *post* force recordings are  
65 shown for the same set including PNS (**a-b** and **e-f**) and TMS (**c-d** and **g-h**). The vertical lines  
66 represent the timing of the triplet-PNS, and single pulse TMS. It is observable the inhibition in  
67 force development with stimulation (much larger for TMS). Both subjects are representative of  
68 different levels of force and VA. In all cases, the delivering of stimulation at the plateau of  
69 force and the subsequent force inhibition produced by stimulation are clear.

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