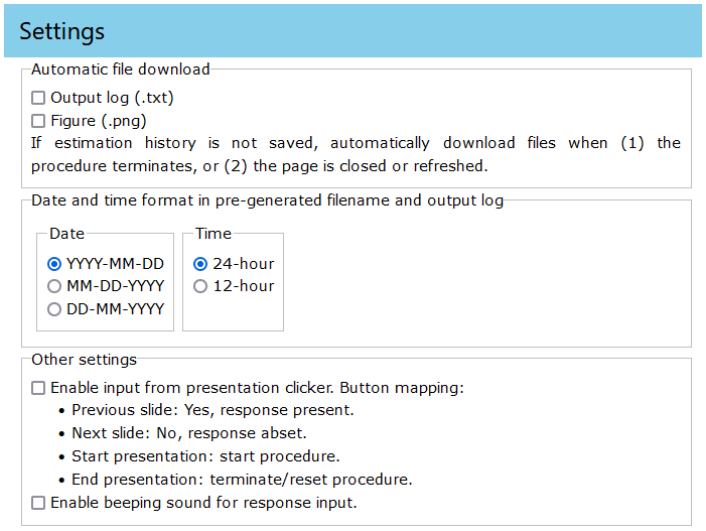
Standard Operating Procedure for SAMT (v1.8.6)

by Boshuo Wang, October 20, 2025

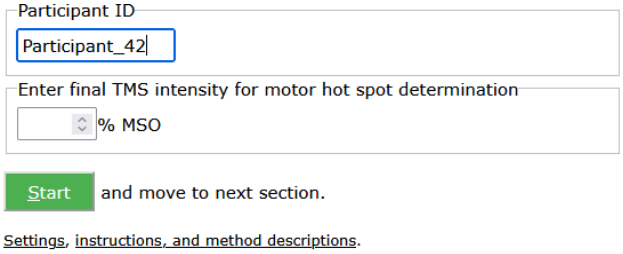
Settings (remembered by the browser)

- Automatic file download: if the check boxes are selected, automatic download of the output log and/or figure will be triggered when the procedure is terminated either manually or automatically at pulse No. 29. Depending on the browser's setting, files could be downloaded to a default folder with pre-generated filenames in the background, or a pop-up window will appear for choosing the download location and entering a filename. Default selections are no automatic downloads.
- Date and time format: set the format of date and time in the output log and pre-generated filenames according to the selection. Defaults are YYYY-MM-DD and hhmm (24-hour time). The selections cannot be changed once a thresholding procedure has started.
- Presentation clicker: when this option is selected, a presentation clicker can be used to start/stop the procedure and enter the response. Please note that some keyboard functions (UpArrow, DownArrow, LeftArrow, RightArrow, PageUp, PageDown, Space, BackSpace, Enter, Escape, and F5) are disabled on SAMT's webpage to map the clicker buttons. Default selection is presentation clicker not enabled.
- Sound: when this option is selected, sounds will be played when the Yes/No buttons or their corresponding keyboard shortcuts are pressed to provide audible feedback. Default selection is sound not enabled.



Protocol

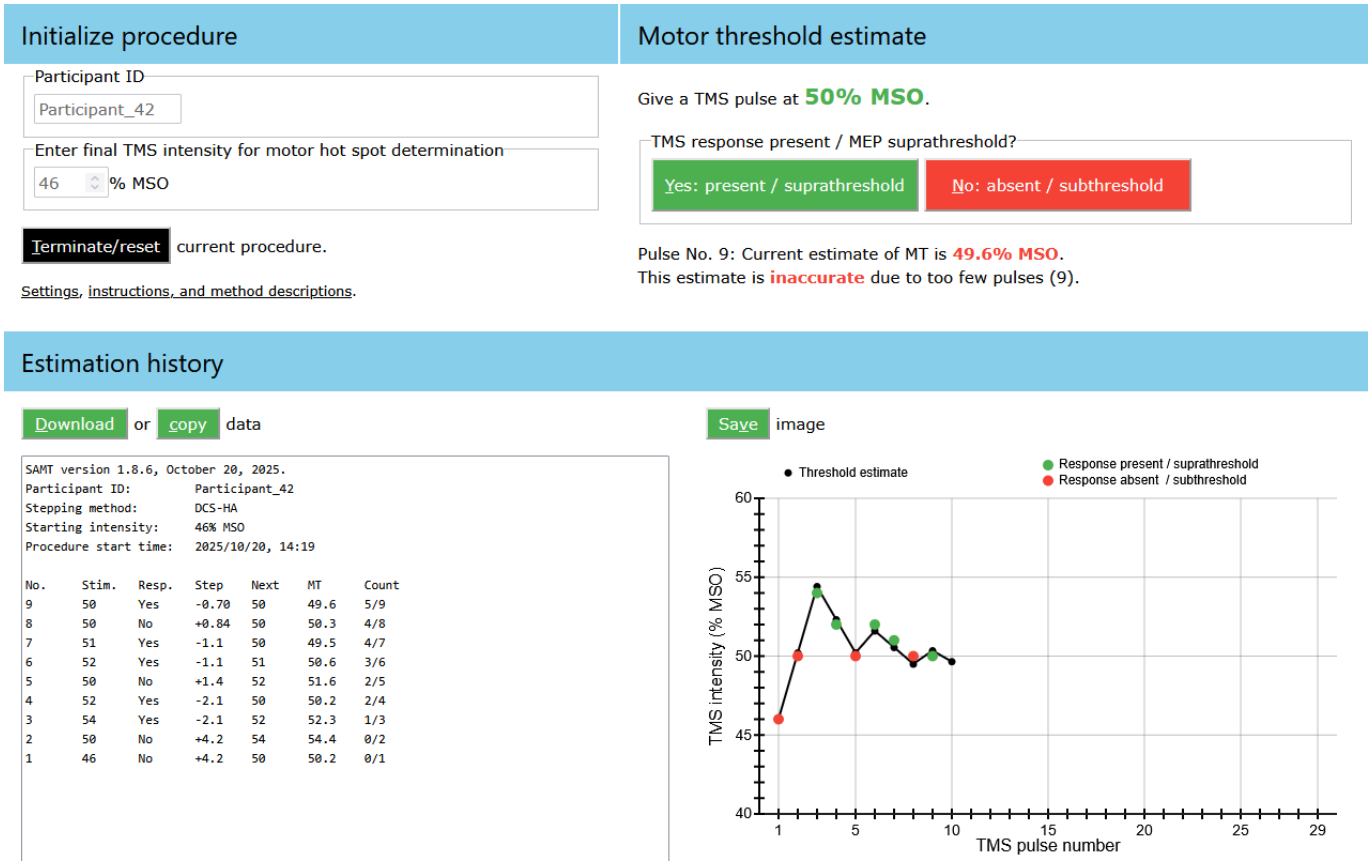
0. Optional: Input the Participant ID in the text box and it will be included in the output log and used to pre-generate the filenames for download. Only valid characters for filenames are accepted.



1. Start the TMS motor thresholding procedure by locating the participant's hotspot of the target muscle per established protocol. Once the hotspot is found, fix the TMS coil placement and input the (final) stimulation amplitude used in the hotspot search in SAMT's input box for initial pulse amplitude.

   Click the green "Start" button (or use keyboard shortcut "s") to start the procedure. If presentation clicker input is enabled, the "Start presentation" button can be used. (Click twice if the procedure does not start with the first click, as some presentation clickers alternate between start and end presentation for the same button.)

2. Follow the instructions to apply TMS pulses at the amplitude specified. If a motor response is observed, click the green "Yes: present / suprathreshold" button (keyboard shortcut "y"); if not, click the red "No: absent / subthreshold" button (keyboard shortcut "n"). If presentation clicker input is enabled, the "Previous slide" (left arrow) and "Next slide" (right arrow) buttons can be respectively used for "Yes" and "No". Repeat this step for at least 20 pulses and up to 29 pulses.



3. The procedure can be terminated at any time before SAMT automatically stops by clicking the "Terminate/reset" button (keyboard shortcut "t"). If presentation clicker input is enabled, the "End presentation" button can be used. (Click twice if the procedure does not end with the first click, as some presentation clickers alternate between start and end presentation for the same button.)

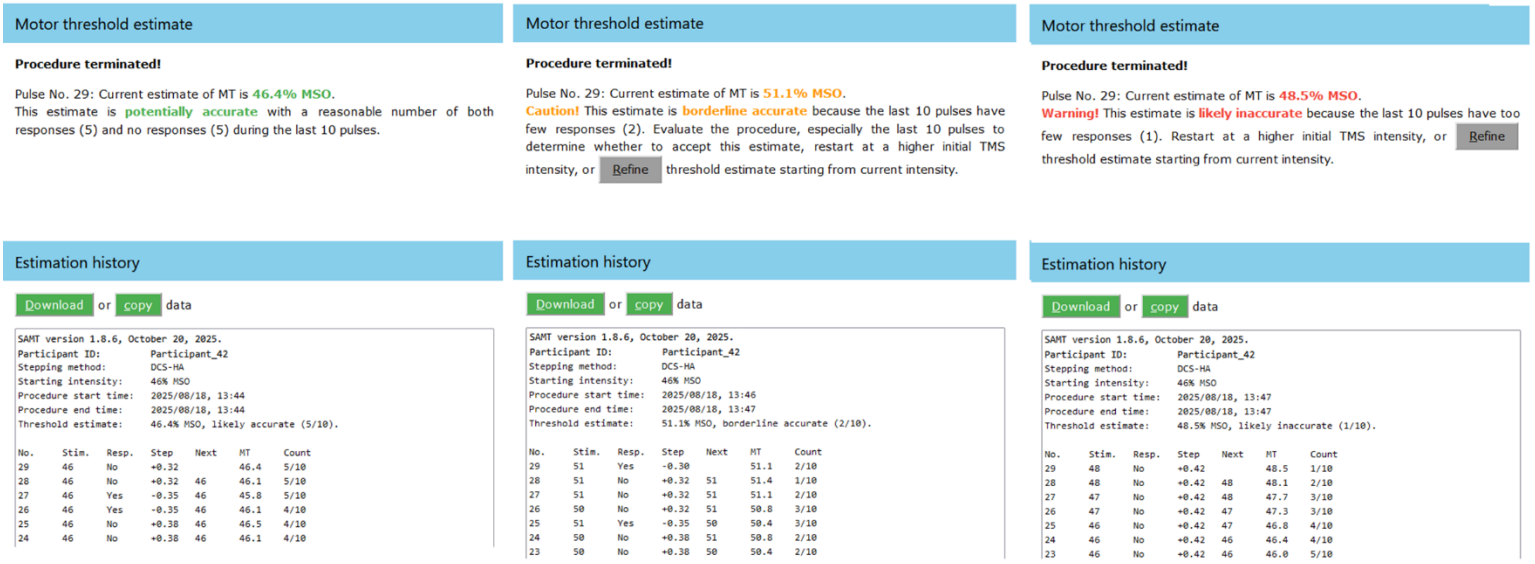
   Alternatively, SAMT will automatically stop when the procedure reaches 29 pulses, and no further inputs are accepted.

   When the procedure stops, the end time and threshold estimate will be added to the header of the output log.

4. From pulse No. 20 until the thresholding procedure ends at pulse No. 29, SAMT evaluates the quality of the threshold estimate according to the number of responses during the last ten (10) pulses. At pulse No. 29:

a. If there are between three (3) and seven (7) responses (including) and the estimate is likely accurate (example figure below on left), a new procedure can be started, e.g., for a different participant.
b. If there are two (2) or eight (8) responses and the estimate is borderline accurate/inaccurate (example figure below in middle). Evaluate the procedure to determine whether to accept the threshold estimate or restart the procedure to refine the estimate.
c. If there are too few (0 or 1) or too many (9 or 10) responses and hence the estimate is likely inaccurate (example figure below on right). It is best to reset and restart the procedure for the current participant using a different initial amplitude as instructed by SAMT.

If the procedure needs to be restarted for the same participant due to inaccuracy of the threshold estimate, a good option of the starting point is the last pulse amplitude of the current procedure. SAMT can automatically transfer the information to the next procedure by using the "Refine" button (keyboard shortcut "r"). Download and save the results from all the procedures for record keeping and data analysis.



5. If automatic download is not selected, please download the output log (".txt" file) and image (".png" file) using the green "Download" and "Save" button (keyboard shortcuts "d" and "v") after the procedure ends. The pre-generated filename is SAMT_*DATE-TIME_participantID*, where *DATE-TIME* is the date and time of download in the chosen format and *participantID* is the entered participant ID (could be blank).

Alternatively, the output log can be manually saved by using the "Copy" button (keyboard shortcuts "c") and then pasting in a text editing software (Notebook, MS Word, etc.).

The output log and figure can be downloaded or copied anytime during the procedure. Some information is only included in the log at the end of the procedure, such as procedure end time, and threshold estimate and description of accuracy.