

Development and evaluation of a novel music-based therapeutic device for upper
extremity movement training: a pre-clinical, single arm trial

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Description of variable labels and definitions as provided in the SONATA output files.

Task settings:

- **Beats per Minute (BPM)**: metronome tempo measured in number of beats per minute.
- **Inter-stimulus interval (ISI)**: Time difference between two metronome beats (in ms).
- **Interval**: time window around the metronome beats in which the patient is required to press the keys (in ms).
- **Key**: Number corresponding to the keys of the target sequence (1 to 32, from lower left to upper right).
- **Time**: Time differences between two recorded keypresses (in ms).

Keys mode output:

In the Keys mode, each output line corresponds to one response or keypress recorded from the user's interaction with the device's touchscreen, with the following variables:

- **Metronome Event (TICK_NO)**: number of metronome beats presented since the start of the task.
- **Sequence Number (SEQ_NO)**: expected order of stimuli in the target sequence. Example: a sequence of 13 stimuli has 13 lines/rows.
- **Sequence Key (SEQ_KEY)**: expected key number of the target sequence (1 to 32, from lower left to upper right).
- **Patient Key (PAT_KEY)**: patient's actual keypress response (1 to 32, from lower left to upper right).
- **Metronome Time (TICK_TIME)**: Time of the metronome presentation (cumulative since the beginning of the task in ms).
- **Patient Time (PAT_TIME)**: Time of user's response (cumulative since the beginning of the task in ms).
- **Inter-Response Interval (IRI)**: Time interval between successive keypresses (in ms).
- **Synchronization Error (SE)**: Time difference between the presentation of the metronome beat and motor response (in ms).

Drawing mode output:

In the Drawing mode, each time a user touches and moves their hand/finger on the touchscreen, a new output line appears with the following variables:

- **Patient X Coordinate (PAT_X)**: x-coordinate of the users' input (in pixel, 0 to 1880).
- **Patient Y Coordinate (PAT_Y)**: y-coordinate of the users' input (in pixel, 0 to 1040).
- **Target Sequence X Coordinate (SEQ_X)**: x-coordinate of the nearest drawing/line target section (-1 if outside the corridor).
- **Target Sequence Y Coordinate (SEQ_Y)**: y-coordinate of the nearest drawing/line target section (-1 if outside the corridor).
- **Times Difference (TIME_DIFF)**: Time interval between successive coordinate changes (in ms).
- **Movement Distance (DIST)**: Distance between the user's input and the nearest drawing/line target section (in pixel).