Each participant contains blocks of recording (active and imagined for control participants and imagined for MS participants) stored as a .mat file (MATLAB).

Example of active block: ‘EEGsigsactive\_subjectS1\_session20170717\_block1.mat’.

Example of imagined block: ‘EEGsigsimagined\_subjectS1\_session20170717\_block1.mat’.

Reference electrode: AFz.

Powerline frequency: 50Hz.

Software filters: common average of all 24 channels.

The .mat files contains the following variables:

1. **Channel\_names**

Cell array contains the channel names, and channel index for EEG\_data.

1. **EEG\_data**

Samples x channels data. See channel\_names for associated channel information.

1. **Fs**

Sampling rate of the EEG\_data recording, will be 2048 Hz.

1. **Prompt\_start\_time\_marker**

The time that the prompter started in system time NOTE: this is not the EEG amplifier start time (see prompt\_times column 5).

1. **Prompt\_times**

A matrix with the system time that each cue was presented.

The matrix is ~30 x 5, with trials in the rows and timing information across the columns.

Column 1: trial labels.

For an imagined block the trial labels are:

* 1. Imagine walking (go)
  2. Imagine left hand (go)
  3. Imagine right hand (go)
  4. Imagine left foot (go)
  5. Imagine right foot (go)
  6. Imagine walking (stop)
  7. Imagine left hand (stop)
  8. Imagine right hand (stop)
  9. Imagine left foot (stop)
  10. Imagine right foot (stop)

For an active block the trial labels are:

1. Left hand (go)
2. Right hand (go)
3. Left foot (go)
4. Right foot (go)
5. Math equation (not used in the study)
6. Left hand (stop)
7. Right hand (stop)
8. Left foot (stop)
9. Right foot (stop)

Column 2: contains timing when the cue appears.

Column 3: contains timing when go/stop appears.

Column 4: contains timing when go/stop disappears.

Column 5: row 1 contains start time of the EEG amplifier, row 2 contains block number, row 3 contains end time of the EEG amplifier. Remainder of rows are zero.

1. **Running\_time**

The number of seconds the block was running for.

1. **Timeofstudy**

The time of the data collection.

**Re-alignment of trial timing:**

Add this line of code to ensure the prompter and EEG data are aligned:

**Participant symptoms:**

**Table 1.** MS participant summary for participants P1-P7. SPMS: Secondary Progressive Multiple Sclerosis. RRMS: Relapsing Remitting Multiple Sclerosis. EDSS: Expanded Disability Status Scale. Time since diagnosis (years) and type of MS for P1 were not collected in previous data. All symptoms were self-reported and used for classifying limbs of weakness in subsequent analysis. Only P5 reported their EDSS score as the other participants either did not remember or did not wish to share.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Participant | Time since Diagnosis | Type of MS | Symptoms | Life Impact |
| P1 | ---- | ---- | Weakness in left leg and right hand. | ---- |
| P2 | 30 | SPMS | Weakness in left arm and leg. | Walking. |
| P3 | 1 | RRMS | Weakness and progressive paralysis in left and right hand. | Fine motor control of fingers. |
| P4 | 3 | RRMS | Weakness in left arm and left leg. | Balance, fatigue, mobility. |
| P5 | 25+ | SPMS | Paralysis in right hand and weakness in left hand. Walking issues when temperature is hot. | Hard to work with speech-to-text software. Cognitive function (EDSS = 4) |
| P6 | < 1 | RRMS | No symptoms noticeable at time of experiment. | None yet. |
| P7 | 15 | SPMS | Paralysis in legs. | Ability to walk distance. |
| P8 | 5 | RRMS | Left hand stiffness, left and right-hand tingling/numbness. | Exercise and working on computer. |