**Effects of Perturbation Velocity, Direction, Background Muscle Activation, and Task Instruction on Long-Latency Responses Measured From Forearm Muscles**

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**Dataset description**

The data is stored in a MATLAB file named EMG.mat. The workspace file contains the following variables:

* ECU
* FCR
* ECULLR
* FCRLLR
* time

Variable description:

**ECU and FCR:** A 5-dimensional cell array with normalized EMG tracks measured during perturbations. Each combination of condition was repeated 10 times, for each subject, so accessing a specific cell in this variable will provide a 10x2049 array of EMG data, with each row corresponding to one of the 10 repetitions.

**ECULLR and FCRLLR:** A 5-dimensional cell array with LLR amplitude (average of the processed EMG signal during the time window corresponding to a long-latency response: 50 to 100 ms), also measured 10 times for each combination of conditions. Accessing a cell in this data will provide a 10x1 array of average EMG values, with each row corresponding to the average LLR for one of the 10 repetitions.

Each of the variables listed above has 5 dimensions, each dimension corresponding to one factor. As an example, the dimensions of variable ECU are ECU{sub,v,d,t,inst}, defined as follows:

* sub = subject number (1 thru 11). Subject 10 has blank cells in the FCR dataset, due to data corruption from noise.
* v = velocity (1, 2, 3). 1=50 deg/s, 2=125 deg/s, 3=200 deg/s
* d = direction (1 or 2). 1=shorten, 2=stretch
* t = torque (1 or 2). 1=0 mNm, 2=200 mNm
* inst = instruction (1 or 2), 1=“yield”, 2=“do not intervene”

As such, the variable EMG.ECU{1,1,1,1,1} is a 10x2049 variable including 10 repetitions of the timeseries of ECU EMG signal measured from subject 1, for perturbations at 50 deg/s, shortening the ECU (extension perturbations), with 0 mNm background torque, when the instruction was “yield”.

**time:** A 1x2049 array of time values corresponding to the EMG readings in milliseconds. Values in this array are from 0 ms to 200 ms. The time series have 2049 datapoints (sampling frequency: 1024 Hz) representing up to the 200 ms from the perturbation onset. LLR averages were taken from the indexes representing 50 to 100 ms, or 513:1024.