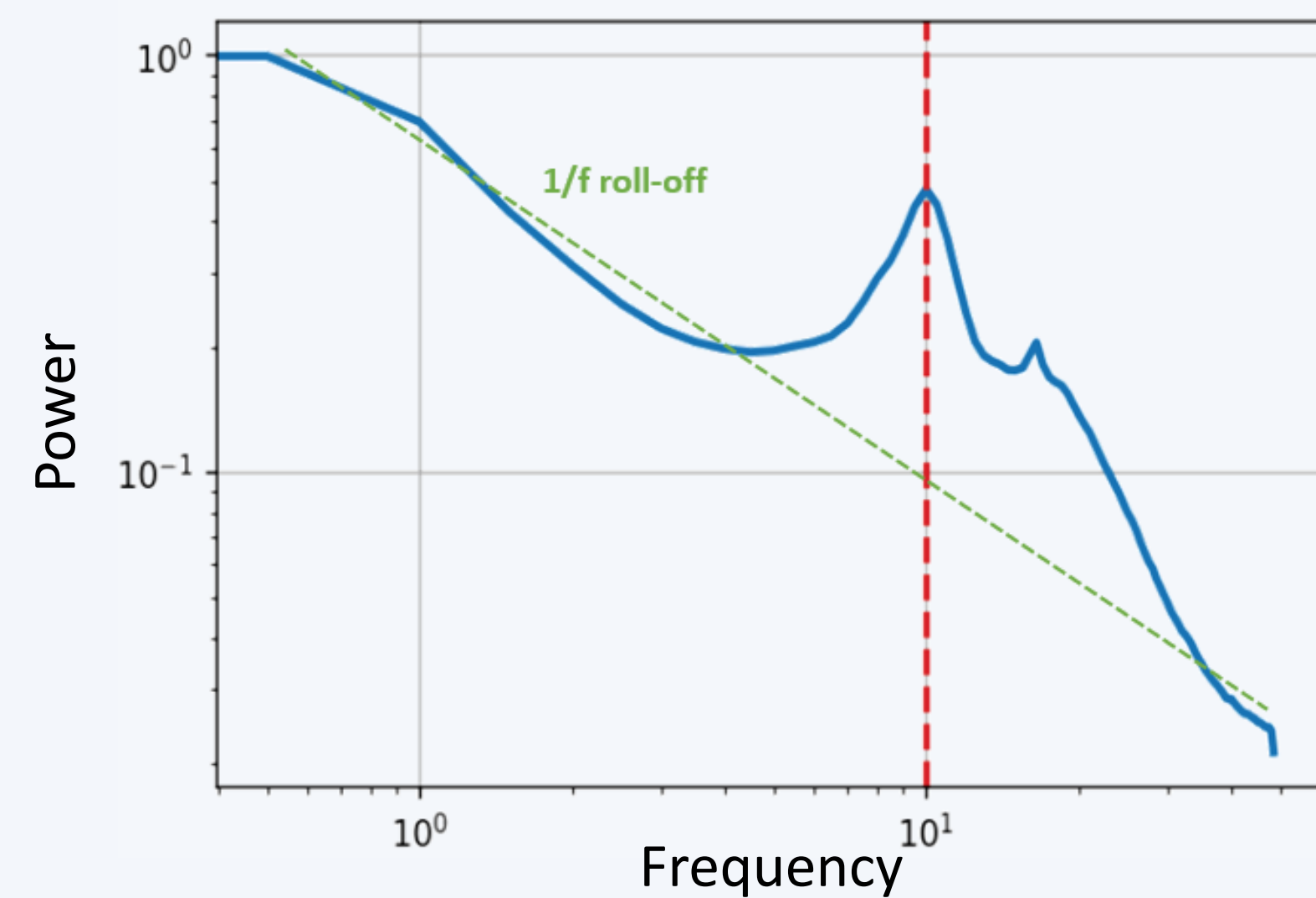


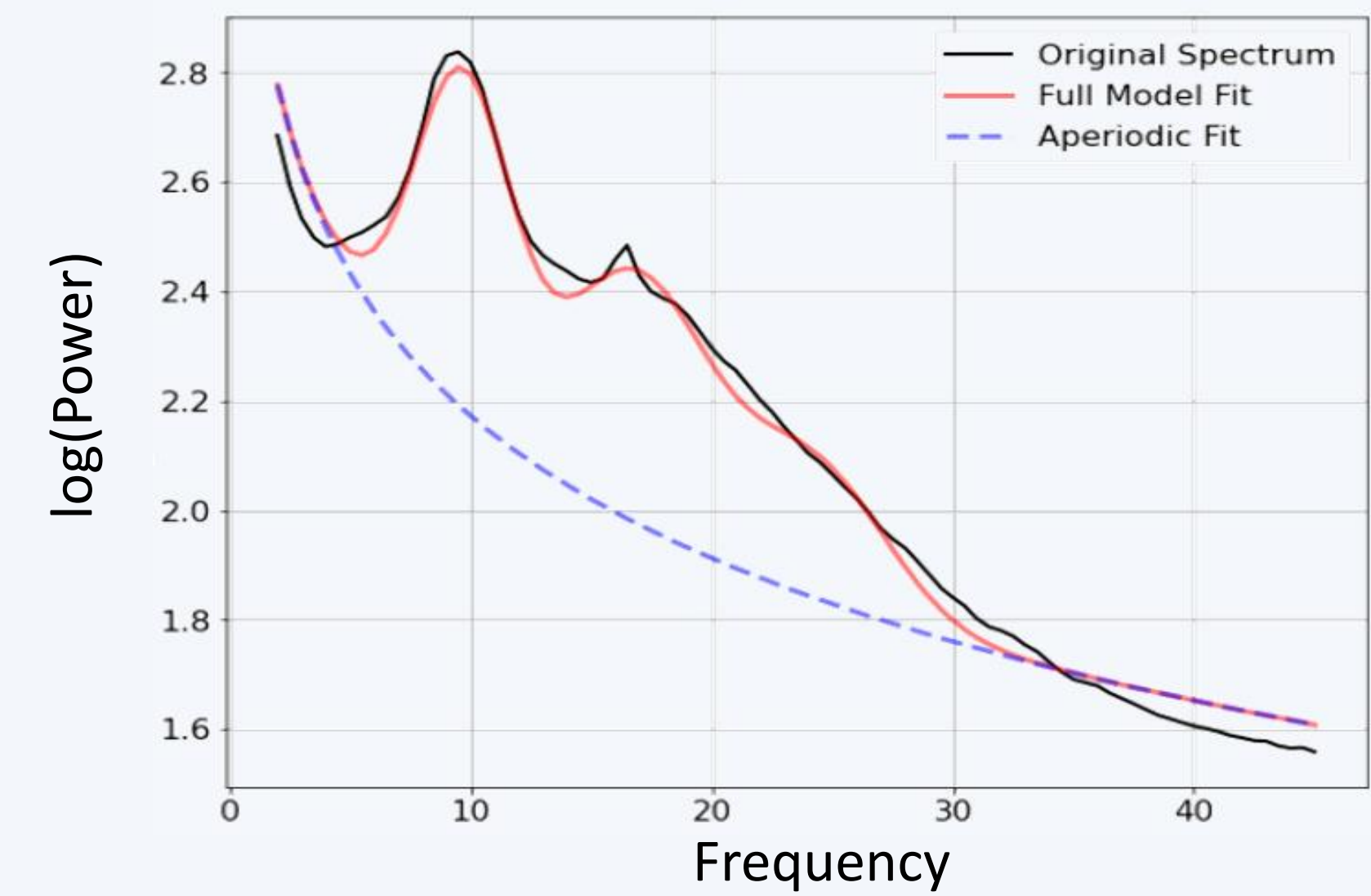
# Cognitive and motor fatigue is associated with increased excitation/inhibition balance

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**Introduction:** Recent research combining neuro-computational modeling with measurements of local field potentials indicates that the slope with which the spectrum of neuronal activity rolls off is a non-invasive marker of the excitation/inhibition balance and has been successfully linked to arousal level and cognitive load.



**Method:** MEG datasets were acquired from 46 MS patients during the resting-state eyes-closed condition. Fatigue was assessed by the Fatigue Scale for Motor and Cognitive Function (FSMC) test. Algorithm: We used the “fitting oscillations and one over f” (FOOOF) algorithm to estimate the  $1/f$  exponent.



An increased excitation/inhibition balance assessed through resting-state MEG is associated with higher levels of motor and cognitive fatigue.



**Results:** We observed a significant correlation between  $1/f$  slope – averaged across the full brain - and FSMC scores. Correlation analyses were controlled for the Expanded Disability Status Scale (EDSS) and disease duration variables and corrected for multiple comparisons using Benjamini-Hochberg's procedure.

