Resting or restless?

Controlling for baseline muscle activity

MCMACKIN LAB

NEUROPHYSIOLOGY RESEARCH

Dr Roisin McMackin,

TMS MultiLab July Meeting

Why does it matter?

Replications/Inconsistencies

Multicenter clinical trials/treatment centers/research studies

Valid biomarkers

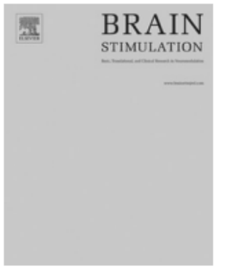
Correct interpretations

Easier/more feasible protocols

Contents lists available at ScienceDirect

Brain Stimulation

journal homepage: www.brainstimjrnl.com



The Resting Motor Threshold — Restless or Resting? A Repeated Threshold Hunting Technique to Track Dynamic Changes in Resting Motor Threshold

Anke Ninija Karabanov [a,b,*,1], Estelle Raffin [a,c,d,1], Hartwig Roman Siebner [a,e]

Acceptable resting trials - Are we ever truly “resting”?

Go to www.slido.com
Code: 4050364

Which EMG criteria do you use to define "too much activity"?

Peaks exceeding specific amplitude 0%

Root mean squared amplitude 0%

Absolute amplitude 0%

Eyeballing 0%

Go to www.slido.com
Code: 4050364

If you use root mean squared amplitude, what is the maximum value at which you allow data to be included?

51-100uV

0%

21-50uV

0%

11-20uV

0%

6-10uV

0%

5uV

Go to www.slido.com
Code: 4050364

If you exclude data with baseline peaks above a given amplitude, what is the maximum value at which you allow data to be included?

51-100uV

0%

21-50uV

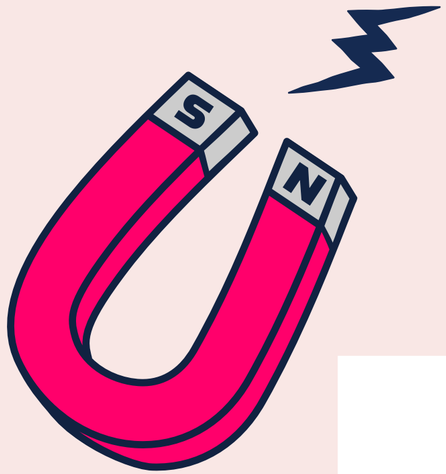
0%

11-20uV

0%

6-10uV

0%

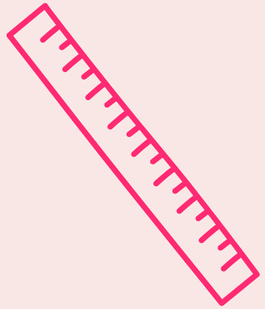


Our study on baseline EMG effects below the threshold (preprint available next week)

Retrospective

45 people, 1761 data points

GLM - Probability of getting an MEP with p2p amplitude >=50uV



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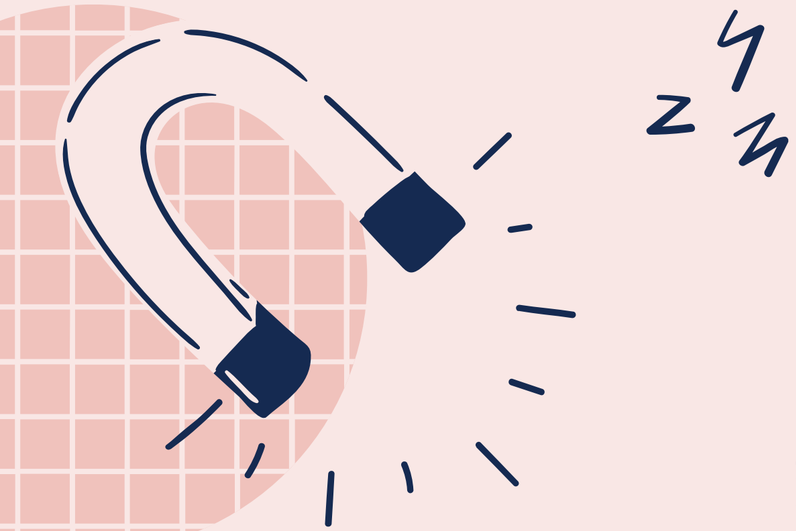
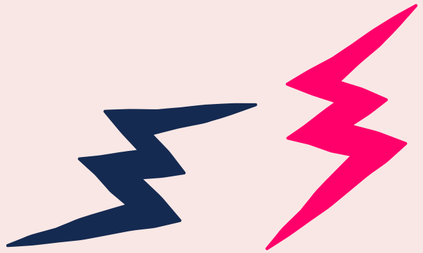
GLM - Probability of getting an MEP with p2p amplitude >=50uV

Normalised stimulation intensity (%RMT) + Baseline RMS amplitude (uV)

All data with RMS baseline amp <10uV





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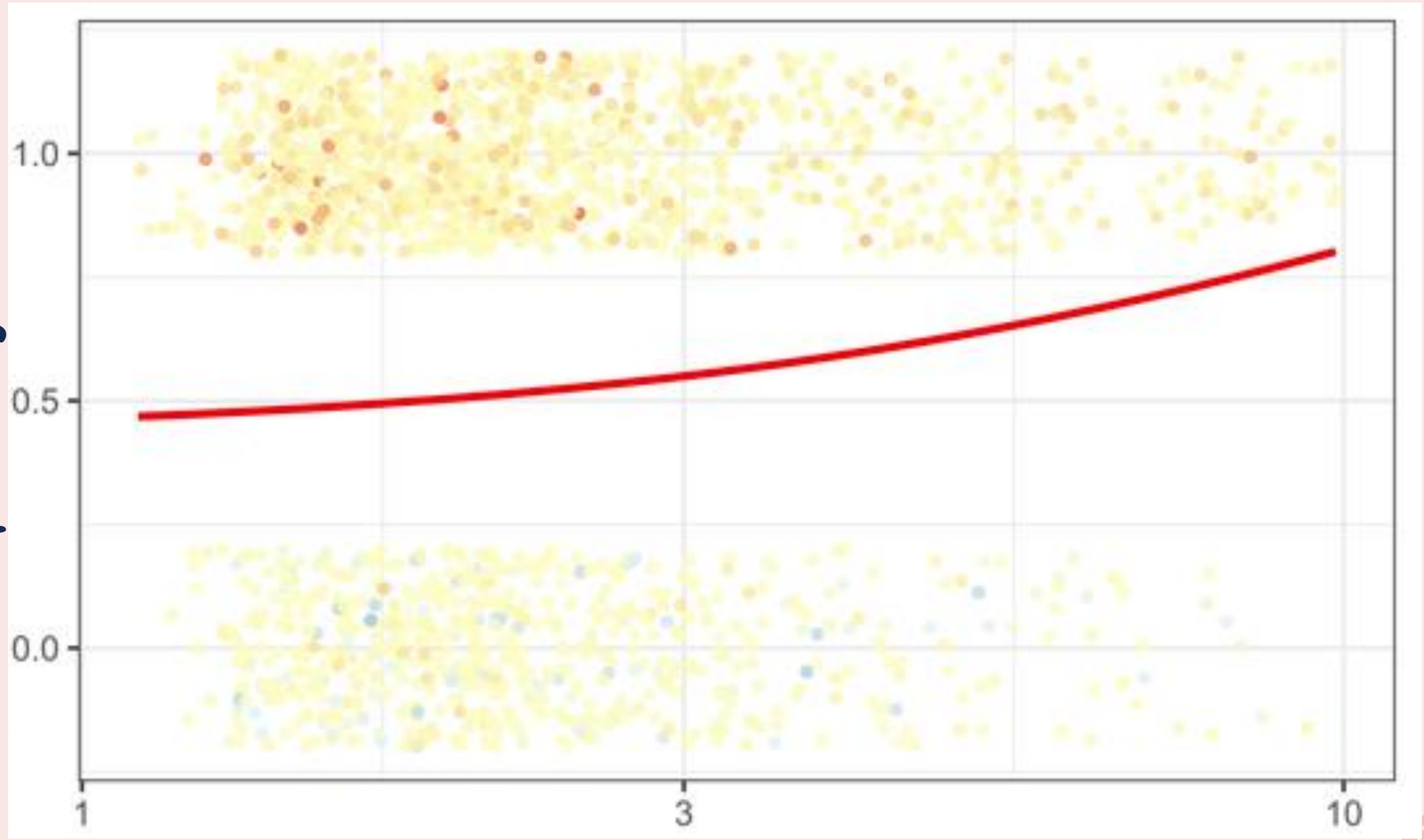


Red line – Predicted P(MEP)

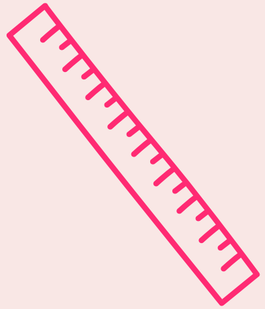
Coloured points – individual trials, where MEP either occurred (top) or did not (bottom).

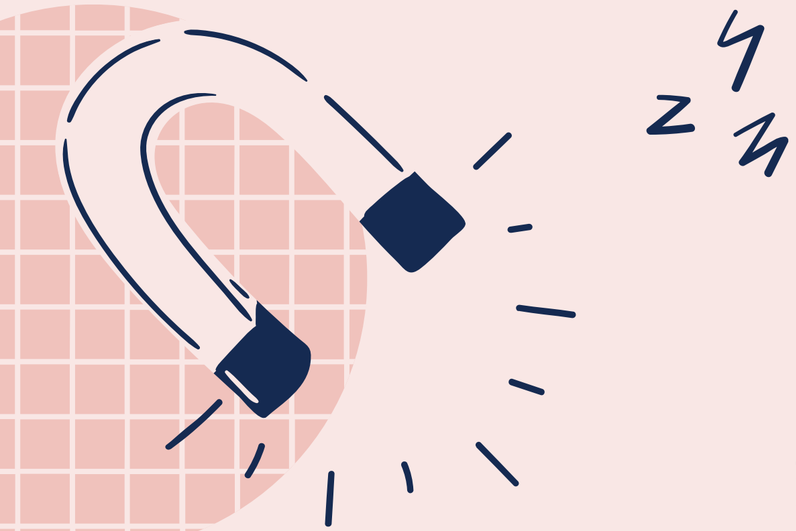
Our study on baseline EMG effects below the threshold (preprint available next week)

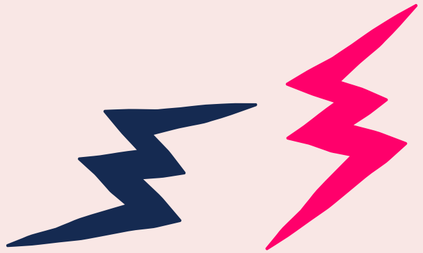
Retrospective

35 people, 1238 data points

GLM - Probability of getting an MEP with p2p amplitude >=50uV







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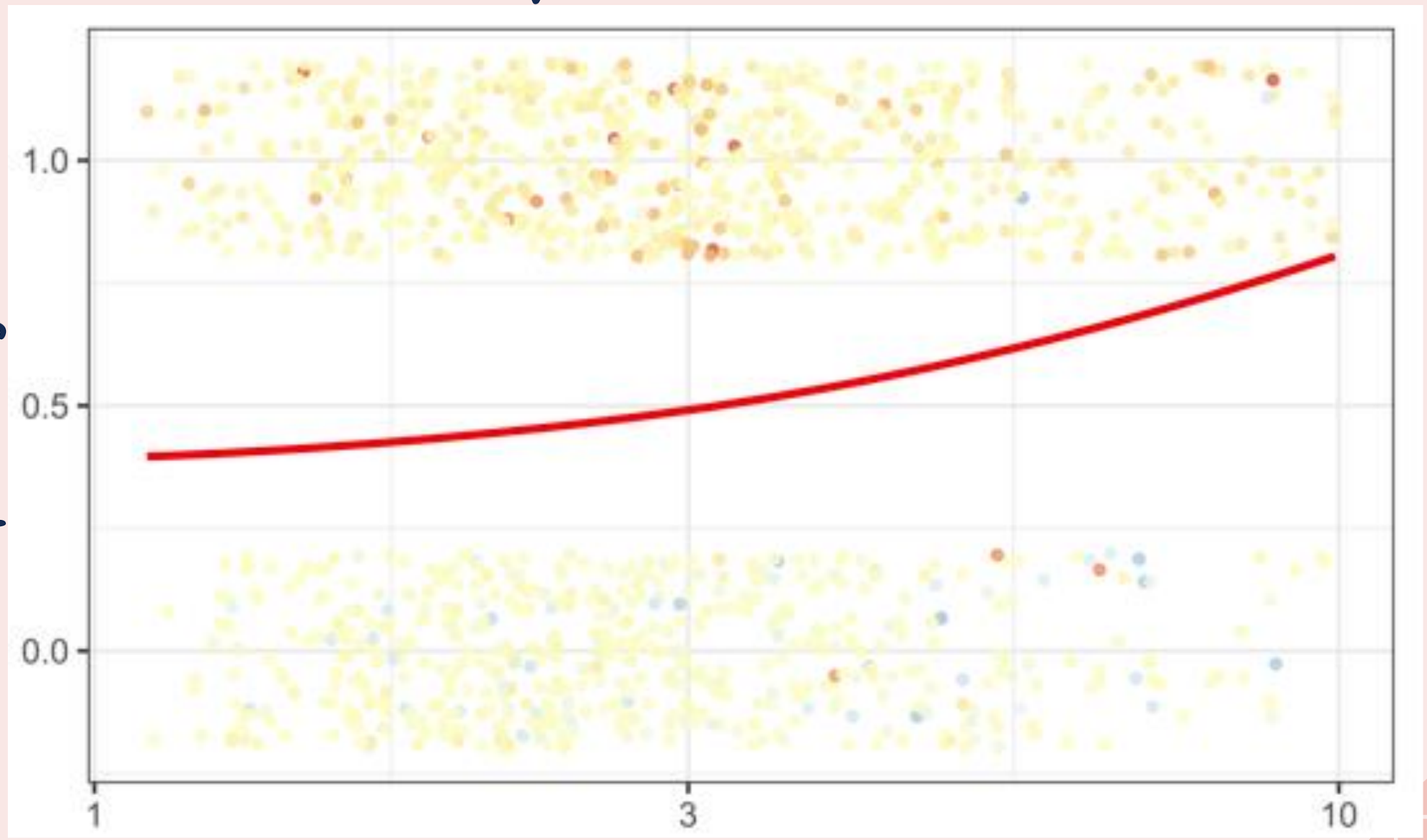
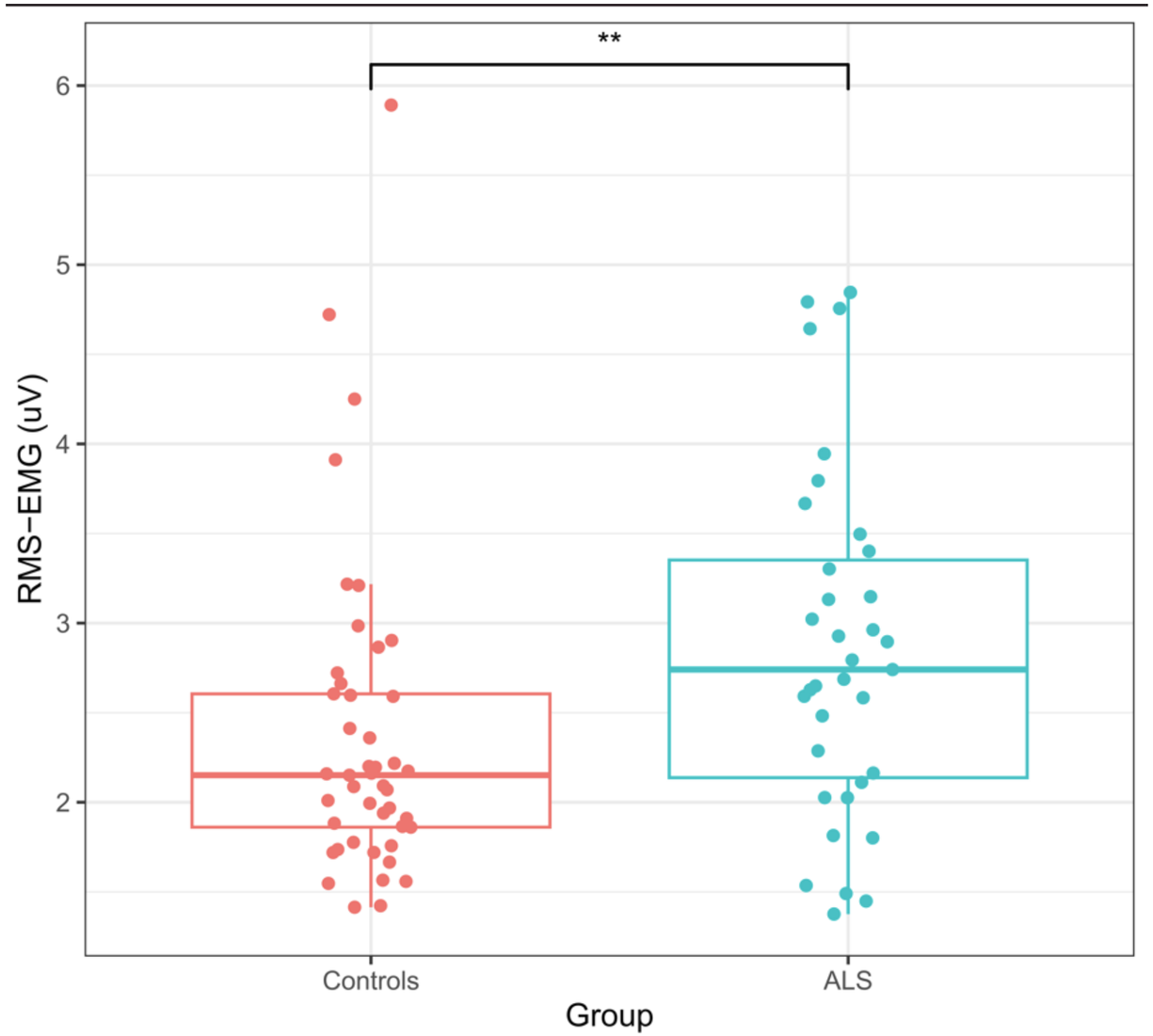


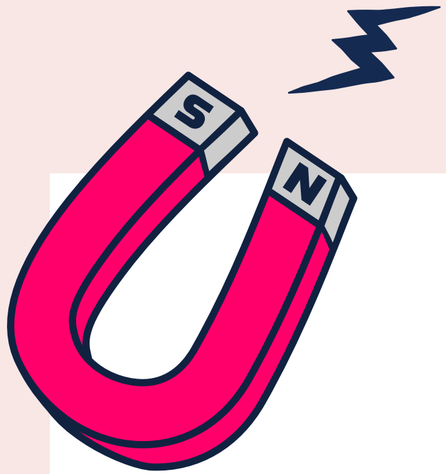
Red line – Predicted P(MEP)

Coloured points – individual trials, where MEP either occurred (top) or did not (bottom).

Comparing cohorts



So what?



The “restless” motor threshold

Accounting

Reporting

Realism