**RELIABILITY OF MOTOR EVOKED POTENTIAL RESTING THRESHOLD AND AMPLITUDE OF PROXIMAL AND DISTAL ARM MUSCLES IN HEALTHY ADULTS**

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**Objectives:** To quantify the intra-rater and test-retest reliability of the motor evoked potential (MEP) resting threshold (RT) and MEP amplitude of the anterior deltoid (AD) and extensor digitorum (ED) of healthy adults using Transcranial Magnetic Stimulation (TMS).

**Methods:** Stimulation was performed on healthy adults with a Magstim® 2002 device using Brainsight® neuro-navigation. Surface EMG (Biometrics Ltd) was recorded from surface electrodes over AD and ED muscles. RT was defined as the minimal TMS intensity to recruit an MEP > 50 μV in five of ten consecutive measurements in both muscles. Measurements were made on three occasions in each participant by the same assessor. Two measurements were carried out on day one with 30 minutes rest in between (tests 1 and 2) and the third measurement was carried out three days later (test 3). Mean peak to peak amplitude of five MEPs at RT were analysed using MATLAB.

**Results:** Twenty participants (10 males and 10 females, mean age of 59.86 years ±11.70SD) completed the study. There was good to excellent reliability of RT for ED and AD between tests 1 and 2 (ICC=0.89 and 0.94 respectively) and tests 1 and 3 (ICC=0.84 and 0.77 respectively). MEP amplitude between tests 1 and 2 had a poor to moderate level of agreement (ICC=0.42 [ED] and 0.53 [AD]) and between tests 1 and 3, moderate to very poor agreement was found (ICC=0.62 [ED] and 0.14 [AD]).

**Conclusions:** RT and MEP amplitude are regularly used as neurophysiological outcome measures in neurorehabilitation research.Measurement of the RT showed excellent intra-rater and test-retest reliability in healthy adults. Measurement of MEP amplitude at RT of both muscles showed poor to moderate agreement. RT provides less information about changes in cortical excitability, however, our results suggest RT to be a more reliable neurophysiological measurement, which could be included in future neurorehabilitation trials.