Can motor recovery in patients after stroke be improved by non-invasive brain stimulation?

John Rothwell

Transcranial magnetic stimulation and transcranial direct current stimulation (sometimes known collectively as “non-invasive brain stimulation”) can change the activity of neurones in the human brain. If they are applied for several minutes they can produce after-effects on the excitability of the stimulated regions that outlast the period of stimulation. These may result from plastic changes in the strength of neural connections. Many centres have attempted to employ these effects in a therapeutic setting to enhance recovery and learning of new skills after injury, but the results from different centres have been mixed: sometimes spectacular, sometimes null. I will explore some of the causes of this: some are controllable, some are individual to the brain of the person stimulated. Is this a clear case for personalised medicine?