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| Autore                  | ROUVEYRE, André   |
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| 2. Record Nr.           | UNINA9910136801903321   |
| Autore                  | Lindsay M. Oberman  |
| Titolo                  | The Safety and Efficacy of Noninvasive Brain Stimulation in Development and Neurodevelopmental Disorders  |
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| Descrizione fisica      | 1 online resource (68 p.)   |
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| Sommario/riassunto      | Noninvasive brain stimulation (including Transcranial Magnetic Stimulation (TMS) and Transcranial Current Brain Stimulation (TCS)) can be used both experimentally and therapeutically. In the experimental domain TMS can be applied in single pulses to depolarize a small population of neurons in a targeted brain region. This protocol can be |

used, for example, to map cortical motor outputs, study central motor conduction time, or evaluate the cortical silent period (a measure of intracortical inhibition) all of which are relevant to neurodevelopment. TMS can also be applied in pairs of pulses (paired pulse stimulation, ppTMS) where two pulses are presented in rapid succession to study intracortical inhibition and facilitation. Trains of repeated TMS (rTMS) pulses can be applied at various stimulation frequencies and patterns to modulate local cortical excitability beyond the duration of the stimulation itself. Depending on the parameters of stimulation the excitability can be either facilitated or suppressed. TCS (including Transcranial Direct Current Stimulation (tDCS), alternating current (tACS), and random noise current stimulation (tRNS) also have the potential to modulate cortical excitability and have also been used to study and modulate cortical activity in healthy and patient populations. The after-effects of rTMS and TCS are thought to be related to changes in efficacy (in either the positive or negative direction) of synaptic connections of the neurons being stimulated, thus these techniques have been used to study and modulate cortical plasticity mechanisms in a number of populations. Recently, researchers have begun to apply these techniques to the study of neurodevelopmental mechanisms as well as the pathophysiology and development of novel treatments for neurodevelopmental disorders. Though there is much promise, caution is warranted given the vulnerability of pediatric and clinical populations and the potential that these techniques have to modify circuit development in a cortex that is in a very dynamic state. This Research Topic hopes to provide an opportunity to share ideas across areas (human and animal researchers, clinicians and basic scientists). We are particularly interested in papers that address issues of choosing a protocol (intensity, frequency, location, coil geometry etc.), populations where noninvasive brain stimulation may have direct impact on diagnostics and treatment, as well as the safety and ethics of applying these techniques in pediatric populations. As many may not be aware of the potential and limitations of noninvasive brain stimulation and its use for research and treatment in this area, this Research Topic promises to have broad appeal. Submissions for all Frontiers article types are encouraged.

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