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1: Muscle Nerve. 2004 Feb;29(2):330-331. [Related Articles](#), [Link](#)



Monophasic negative sympathetic skin responses and autonomic dysfunction in carpal tunnel syndrome.

PubMed Services

Brasil-Neto JP, Carneiro CR.

Laboratorio de Neurociencias e Comportamento, Departamento de Ciencias Fisiologicas, Instituto de Biologia, Universidade de Brasilia, Brasilia, Brazil.

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PMID: 14755503 [PubMed - as supplied by publisher]

2: Arq Neuropsiquiatr. 2003 Mar;61(1):83-6. Epub 2003 Apr 16. [Related Articles](#), [Link](#)

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[The use of slow-frequency transcranial magnetic stimulation in treatment of depression at Brasilia University Hospital: preliminary findings]

[Article in Portuguese]

Brasil-Neto JP, Boechat-Barros R, da Mota-Silveira DA.

Laboratorio de Neurobiologia, Departamento de Ciencias Fisiologicas, Universidade de Brasilia, Brasilia, DF, Brasil.

This paper reports the use of slow frequency transcranial magnetic stimulation of the right pre-frontal cortex in three patients with a diagnosis of major depressive episode according to the DSM-IV classification. There was a significant improvement in two patients, with a decrease of over 50% in the Hamilton Scale scores- 17 items. Possible indications and limitations of this therapeutic tool are discussed, as well as socio-economic aspects of this new treatment.

Publication Types:

- Case Reports

PMID: 12715025 [PubMed - indexed for MEDLINE]



Postexercise facilitation of motor evoked potentials elicited by ipsilateral voluntary contraction.

Brasil-Neto JP, Araujo VP, Carneiro CR.

Laboratorio de Neurobiologia, Departamento de Ciencias Fisiologicas, ICC-SU Instituto de Biologia, Universidade de Brasilia, Campus UnB, Brasilia DF 70919-900, Brazil. jbrasil@unb.br

Motor evoked potentials (MEPs) to transcranial magnetic stimulation (TMS) increase in amplitude when obtained immediately after a period of exercise of the target muscle (postexercise facilitation). We studied postexercise facilitation of MEPs to TMS after periods of voluntary activation of either the ipsilateral or contralateral primary motor cortex (simple finger movements) or supplementary motor area (complex finger movements). Postexercise facilitation of the first dorsal interosseous MEPs occurred ipsilaterally even after simple, unilateral finger movements of the dominant hand. The findings are taken to suggest transcallosal transfer of excitability from the dominant to nondominant cerebral hemisphere, perhaps related to mechanisms involved in bimanual motor coordination. Copyright 1999 John Wiley & Sons, Inc.

Publication Types:

- Clinical Trial

PMID: 10567085 [PubMed - indexed for MEDLINE]

Circadian latency variability of sympathetic skin responses.

Brasil-Neto JP, Goncalves CA, Araujo CD, Carneiro CR, Soares MV.

Departamento de Ciencias Fisiologicas, Universidade de Brasilia, Brazil.

Sympathetic skin responses (SSRs) have been increasingly used as tests for autonomic function in the clinical setting. In spite of the known circadian rhythmicity of sympathetic function, however, normative studies have not addressed the possibility of circadian variability of SSR parameters. Ten normal volunteers (7 men, 3 women, aged 19 to 43) had SSR testing performed in the morning, at noon, and in the early evening, and response latencies and amplitudes were compared for the different day periods. Although amplitude values varied in a random fashion, regardless of the time of testing, there was a statistically significant variability in response latencies, which were, on the average, approximately 150 ms shorter in the morning trials, as compared to the early evening ones. This difference was statistically significant (ANOVA, $p < 0.01$). We propose that circadian variability of SSR latencies should be taken in account in normative studies of SSR parameters.

Publication Types:

- Clinical Trial
- Randomized Controlled Trial

PMID: 9791745 [PubMed - indexed for MEDLINE]

5: Muscle Nerve. 1998 Jul;21(7):936-9.

[Related Articles](#), [Lir](#)



Modulation of vastus medialis motoneuronal excitability by sciatic nerve afferents.

Valls-Sole J, Hallett M, Brasil-Neto J.

Department de Medicina, Hospital Clinic, Universitat de Barcelona, Spain.

We activated the sciatic nerve afferents by either the discharge of a magnetic coil or a needle inserted near the nerve. Both types of stimulation induced facilitation of the vastus medialis (VM) H reflex, and of the VM response to transcranial magnetic stimulation, at the joint time of arrival of conditioning and test volleys while a subsequent inhibition was induced only in the H reflex. We conclude that sciatic nerve afferents induce reciprocal inhibition of VM motoneurons presynaptically on the Ia afferent terminals.

PMID: 9626254 [PubMed - indexed for MEDLINE]

6: Acta Neurol Scand. 1995 Nov;92(5):383-6.

[Related Articles](#), [Lir](#)

Role of intracortical mechanisms in the late part of the silent period of transcranial stimulation of the human motor cortex.

Brasil-Neto JP, Cammarota A, Valls-Sole J, Pascual-Leone A, Hallett M, Cammarota LG.

Transcranial magnetic stimulation (TMS) and transcranial electrical stimulation (TES) of the human motor cortex produce a silent period (SP) following motor evoked potentials (MEPs). The early part of the SP can be explained by decreased alpha motor neuron excitability, whereas the late part is presumably due to suprasegmental mechanisms. In order to determine the level of the suprasegmental contribution of the generation of SPs, we recorded excitatory and inhibitory responses to TMS, TES and percutaneous electrical brainstem stimulation (PBS) in the voluntarily activated first dorsal interosseous muscle of the hand. Stimulus intensities were set so that PBS and TES induced MEPs with areas equal to or larger than those of MEPs obtained with TMS. This procedure revealed that SPs were 49% and 83% shorter with TES and PBS, respectively, than with TMS. As TMS is more effective than TES or PBS in activating cortic interneurons, these findings support the idea that a significant component of the SP arises from intracortical mechanisms.

PMID: 8610491 [PubMed - indexed for MEDLINE]

7: J Neurophysiol. 1995 Sep;74(3):1037-45.

[Related Articles](#), [List](#)

Modulation of muscle responses evoked by transcranial magnetic stimulation during the acquisition of new fine motor skills.

Pascual-Leone A, Nguyet D, Cohen LG, Brasil-Neto JP, Cammarota A, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland 20892, USA.

1. We used transcranial magnetic stimulation (TMS) to study the role of plastic changes of the human motor system in the acquisition of new fine motor skills. We mapped the cortical motor areas targeting the contralateral long finger flexor and extensor muscles in subjects learning a one-handed, five-finger exercise on the piano. In a second experiment, we studied the different effects of mental and physical practice of the same five-finger exercise on the modulation of the cortical motor areas targeting muscles involved in the task. 2. Over the course of 5 days, as subjects learned the one-handed, five-finger exercise through daily 2-h manual practice sessions, the cortical motor areas targeting the long finger flexor and extensor muscles enlarged, and their activation threshold decreased. Such changes were limited to the cortical representation of the hand used in the exercise. No changes of cortical motor outputs occurred in control subjects who underwent daily TMS mapping but did not practice on the piano at all (control group 1). 3. We studied the effect of increased hand use without specific skill learning in subjects who played the piano at will for 2 h each day using only the right hand but who were not taught the five-finger exercise (control group 2) and who did not practice any specific task. In these control subjects, the changes in cortical motor outputs were similar but significantly less prominent than those occurring in the test subjects, who learned the new skill. (ABSTRACT TRUNCATED AT 250 WORDS)

PMID: 7500130 [PubMed - indexed for MEDLINE]

8: Muscle Nerve. 1994 Jul;17(7):713-9.

[Related Articles](#), [List](#)

evoked potentials.

Brasil-Neto JP, Cohen LG, Hallett M.

Human Cortical Physiology Unit, Medical Neurology Branch, National Institute of Health, Bethesda, Maryland 20892.

We have previously shown that the amplitudes of motor evoked potentials (MEPs) elicited by transcranial magnetic stimulation (TMS) were transiently decreased after exercise, indicating fatigue of motor pathways in the central nervous system. The responsible mechanism is apparently decreased efficiency in the generation of the descending volleys in the motor cortex. We also noted a progressive decrement in amplitude from the first to the fourth MEP. To further clarify the mechanism of this phenomenon, 5 subjects were studied with TMS delivered at the rates of 0.1, 0.15, 0.3, 1, 3, and 6 Hz. The effect was best demonstrated at 0.3 Hz, and occurred after both isometric and isotonic exercise. Three of the subjects also had 0.3-Hz percutaneous electrical stimulation of the brainstem, and a decrement in MEP amplitude did not occur. Further, the delivery of TMS during muscle contraction after muscle fatigue failed to produce a decrement. The results are similar to those found at the neuromuscular junction in myasthenia gravis and are consistent with a reduced safety factor of cortical synaptic transmission in central nervous system fatigue.

PMID: 8007995 [PubMed - indexed for MEDLINE]

9: Electroencephalogr Clin Neurophysiol. 1994 Jun;93(3):230-6. [Related Articles](#), [Lit](#)

Differentiation of sensorimotor neuronal structures responsible for induction of motor evoked potentials, attenuation in detection of somatosensory stimuli, and induction of sensation of movement: mapping of optimal current directions.

Pascual-Leone A, Cohen LG, Brasil-Neto JP, Valls-Sole J, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

Transcranial magnetic stimulation (TMS) of the sensorimotor cortex can evoke motor evoked potentials (MEPs), attenuation in detection of somatosensory stimuli (ADSS), and sensation of movement (SOM) referred to the same body part. In this study we tried to differentiate the substrates responsible for these effects. In 6 normal volunteers, TMS was applied with a nearly monopolar Dantec stimulator and a butterfly coil. Optimal scalp location and current direction were determined for induction of MEPs in abductor pollicis brevis (APB), first dorsal interosseous (FDI), and adductor digiti minimi (ADM); SOM in digits 2 and 5 in an ischemically paralyzed hand; and ADSS applied to digits 2 and 5. All 3 muscles' MEPs and SOM and ADSS in both digits were optimally activated from a single scalp position. In all subjects, optimal current directions for MEPs pointed anteriorly; those for ADSS and SOM pointed posteriorly. Optimal current directions showed the same progression in all subjects for MEPs (ADM, FDI, and APB from antero-lateral to antero-medial), ADSS (digit 5 postero-medial, 2 postero-lateral), and SOM (digit 1 through 5 postero-lateral to postero-medial). We conclude that neuronal networks targeting corticospinal neurons responsible for MEPs are different from those leading to SOM and ADSS (which could not be differentiated).

PMID: 7515800 [PubMed - indexed for MEDLINE]

Akinesia in Parkinson's disease. II. Effects of subthreshold repetitive transcranial motor cortex stimulation.

Pascual-Leone A, Valls-Sole J, Brasil-Neto JP, Cammarota A, Grafman J, M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

We studied the effects of repetitive transcranial stimulation of the motor cortex (rTMS) on choice reaction time (cRT), movement time (MT), and error rate (ER) in a serial reaction-time task in six medicated patients with Parkinson's disease (PD) and 10 age-matched normal controls. In normal subjects, subthreshold 5-Hz rTMS did not significantly change cRT, slightly shortened MT, but increased ER. In the patients, rTMS significantly shortened cRT and MT without affecting ER. These effects did not impair procedural learning. Performance on a grooved peg-board test was improved by rTMS in the same PD patients, especially when they were off medications, but worsened in the normal subjects. Repetitive, subthreshold motor cortex stimulation can improve performance in patients with PD and could be useful therapeutically.

PMID: 8190293 [PubMed - indexed for MEDLINE]

Akinesia in Parkinson's disease. I. Shortening of simple reaction time with focal, single-pulse transcranial magnetic stimulation.

Pascual-Leone A, Valls-Sole J, Brasil-Neto JP, Cohen LG, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

We studied the effects of transcranial magnetic stimulation (TMS) of the motor cortex on simple reaction time (RT) in 10 patients with Parkinson's disease compared with 10 age-matched normal controls. The subjects flexed their right elbow rapidly in response to a visual go-signal. In random trials, TMS was applied to the left motor cortex at varying delays after the go-signal. In trials without TMS, RT was longer in the patients. However, in the trials with subthreshold TMS, RT in the patients became as fast as RT in trials without TMS in the controls. This shortening was associated with normalization of the voluntary triphasic EMG pattern and the pre-movement cortical excitability increase.

Publication Types:

- Clinical Trial
- Randomized Controlled Trial

PMID: 8190292 [PubMed - indexed for MEDLINE]

Abnormal facilitation of the response to transcranial magnetic stimulation in patients with Parkinson's disease.

Valls-Sole J, Pascual-Leone A, Brasil-Neto JP, Cammarota A, McShane L, Hallett M.

Human Motor Control Section, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

We studied the facilitation of the motor evoked potential (MEP) elicited with transcranial magnetic stimulation by increasing the stimulus intensity and the degree of voluntary activation of the target muscle in patients with Parkinson's disease (PD) and in normal volunteers. The threshold intensity for eliciting MEP with the muscle at rest did not differ in PD patients and normal subjects. At rest stimuli of similar intensity, related to the individual's threshold, elicited MEPs with amplitudes consistently larger in patients than in normal subjects, although when we compared the averaged MEP amplitude across all stimulus intensities, the differences reached only borderline statistical significance. Voluntary muscle activation elicited a smaller increase in the MEP area in PD patients than in normal subjects. Increasing the degree of voluntary muscle activation at fixed stimulus intensities elicited a smaller increase of MEP amplitude, duration, and area in PD patients than in normal subjects. These results suggest that control of the excitability of the motor system is abnormal in PD patients, with enhancement of excitability at rest and weak energization during voluntary muscle activation.

PMID: 8164834 [PubMed - indexed for MEDLINE]

13: Electroencephalogr Clin Neurophysiol. 1994 Feb;93(1):42-8. [Related Articles](#), [Lit](#)

Non-invasive differentiation of motor cortical representation of muscles by mapping of optimal current directions.

Pascual-Leone A, Cohen LG, Brasil-Neto JP, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

Non-invasive mapping of human motor cortex by stimulating different scalp positions with a magnetic coil held at a constant orientation allows differentiation of proximal and distal arm muscles. This study describes a technique for more precise mapping of closely represented muscles using different orientations of a coil that delivers nearly monopolar current pulses. EMG was recorded from abductor pollicis brevis (APB), first dorsal interosseous (FDI), abductor digiti minimi (ADM), and flexor carpi radialis (FCR) of 9 normal volunteers. Stimuli were delivered from a Dantec stimulator through an 8-shaped coil. The center of the coil was kept flat on the scalp on a given position, and the coil rotated at different angles. The amplitudes of the motor evoked potentials were used for calculation of optimal current directions in the brain for activation of each muscle in each position. The optimal current direction for FCR activation pointed antero-medially. ADM, FDI and APB mapped progressively more antero-laterally. The relationship between current directions was constant across subjects and did not change in different scalp positions. This technique improves the spatial resolution of non-invasive cortical mapping and may express the differences in orientations of interneuronal nets in the precentral gyrus.

PMID: 7511521 [PubMed - indexed for MEDLINE]

Modulation of motor cortical outputs to the reading hand of bra

Pascual-Leone A, Cammarota A, Wassermann EM, Brasil-Neto JP, Cohen Hallett M.

Human Cortical Physiology Unit, NINDS, NIH, Bethesda, MD 20892.

We used focal transcranial magnetic stimulation to map the motor cortical areas targeting the first dorsal interosseous and the abductor digiti minimi muscles bilaterally in 10 proficient braille readers and 10 blind controls who were matched for age (mean, 50.6 yr) and age at time of blindness (mean, 7.5 yr). The proficient braille readers had learned braille at age 8 to 14 years and used it daily for 5 to 10 hours. Controls had not learned braille until age 17 to 21 years and used it daily for < 1 hour. In the controls, motor representations of the right and left first dorsal interosseous and abductor digiti minimi muscles were not significantly different. However, in the proficient braille readers, the representation of the first dorsal interosseous muscle in the reading hand was significantly larger than that in the nonreading hand or in either hand of the controls. Conversely, the representation of the abductor digiti minimi muscle in the reading hand was significantly smaller than that in the nonreading hand or in either hand of the controls. These differences were not due to differences in motor thresholds. Our results suggest that the cortical representation of the reading finger in proficient braille readers is enlarged at the expense of the representation of other fingers.

PMID: 8517678 [PubMed - indexed for MEDLINE]

Rapid modulation of human cortical motor outputs following ischaemic nerve block.

Brasil-Neto JP, Valls-Sole J, Pascual-Leone A, Cammarota A, Amassian V Cracco R, Maccabee P, Cracco J, Hallett M, Cohen LG.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland 20892.

The amplitudes of motor evoked potentials to transcranial magnetic stimulation from muscles immediately proximal to a temporarily anaesthetized (Bier's block) human forearm increase in minutes after the onset of anaesthesia and return to control values after the anaesthesia subsides. In order to determine the level at which the early modulation of human motor outputs takes place, we recorded maximal H reflexes, peripheral M responses, motor evoked potentials to transcranial magnetic stimulation, and motor evoked potentials to transcranial electrical stimulation and spinal electrical stimulation from a muscle immediately proximal to a limb segment made ischaemic by a pneumatic tourniquet. The amplitudes of motor evoked potentials to transcranial magnetic stimulation, but not to transcranial electrical stimulation and spinal electrical stimulation, were larger during ischaemia, implying that the site of change was in the motor cortex. The maximal H/M ratios were unaffected by ischaemia, indicating that alpha-motor neuron excitability to segmental Ia inputs remained unchanged. The map of cortical representation areas for this muscle obtained with transcranial magnetic stimulation was also enlarged. Taken together, our findings suggest that the temporary removal by ischaemic nerve block of myelinated afferent inputs

16: Electroencephalogr Clin Neurophysiol. 1993
Apr;89(2):120-30.

[Related Article](#)
[Lit](#)

Safety of rapid-rate transcranial magnetic stimulation in normal

Pascual-Leone A, Houser CM, Reese K, Shotland LI, Grafman J, Sato S, Valls-Sole J, Brasil-Neto JP, Wassermann EM, Cohen LG, et al.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

In 9 normal volunteers, we studied the safety of rapid-rate transcranial magnetic stimulation (rTMS) applied to different scalp positions at various frequencies and intensities. Pure tone threshold audiometry showed temporary threshold shifts in 3 subjects. In the subject stimulated at the highest intensity, rTMS induced a focal, secondarily generalized seizure despite the absence of definite risk factors for seizures. Rapid-rate TMS did not result in any important changes in the neurological examination findings, cognitive performance, electroencephalogram, electrocardiogram, and hormone levels (prolactin, adrenocorticotrophic hormone, thyroid-stimulating hormone, luteinizing hormone and follicle-stimulating hormone). In 10 additional subjects, the electromyographic activity in several contralateral muscles showed that trains of rTMS applied to the motor cortex induced a spread of cortical excitability. The spread of excitability depended on the intensity and frequency of the stimuli and probably constituted an early epileptogenic effect of rTMS. Guidelines for preventing the undesirable side effects of rTMS are offered.

PMID: 7683602 [PubMed - indexed for MEDLINE]

17: Exp Brain Res. 1993;93(1):181-4.

[Related Articles](#), [Lit](#)

Postexercise depression of motor evoked potentials: a measure of central nervous system fatigue.

Brasil-Neto JP, Pascual-Leone A, Valls-Sole J, Cammarota A, Cohen LG, et al.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

Fatigue of voluntary muscular effort is a complex and multifaceted phenomenon. Fatigue of peripheral nervous system components, including the contractile apparatus and the neuromuscular junction, has been well studied. Central nervous system components also fatigue, but studies have lagged for want of objective methods. Transcranial magnetic stimulation is a relatively new technique that can be used to assess central nervous system excitability from the motor cortex to the alpha-motoneuron. In six normal volunteers, including four of the investigators, the amplitudes of motor evoked potentials elicited by transcranial magnetic stimulation were transiently decreased after exercise, indicating fatigue of motor pathways in the central nervous system. The decrease in amplitude was associated with a feeling of fatigue. The mechanism of this phenomenon is apparently decreased efficiency in the generation of the motor command in the

18: Adv Neurol. 1993;63:187-200.

[Related Articles](#), [Lit](#)

Plasticity of cortical motor output organization following deafferentation, cerebral lesions, and skill acquisition.

Cohen LG, Brasil-Neto JP, Pascual-Leone A, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland 20892.

Publication Types:

- Review
- Review, Tutorial

PMID: 8279304 [PubMed - indexed for MEDLINE]

19: J Neurol Neurosurg Psychiatry. 1992 Oct;55(10):964-6.

[Related Articles](#), [Lit](#)

Focal transcranial magnetic stimulation and response bias in a forced-choice task.

Brasil-Neto JP, Pascual-Leone A, Valls-Sole J, Cohen LG, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland 20892.

The effects of transcranial magnetic stimulation were studied on the performance of a warned, forced-choice response time task by normal adults. The task consisted of extension of the index finger in response to the click produced by the discharge of the magnetic coil (go-signal). The subjects were asked to choose the right or left finger only after the go-signal was delivered. Single magnetic stimulations were delivered to the prefrontal or motor area, and in the control situation, away from the head. Magnetic stimulation affected hand preference only when it was delivered to the motor area. With stimulation of this area, subjects more often chose the hand contralateral to the site stimulated with response times that were mainly less than 200 ms. With longer response times (between 200 and 1100 ms), magnetic stimulation had no effect on hand preference regardless of the site stimulated. Stimulation of prefrontal areas yielded results similar to the control situation. These results suggest that response bias in this paradigm is caused by an effect of magnetic stimulation on neural structures within, or closely related to, the motor areas of the brain. Although the response bias was clear and predictable, the subjects were unaware of its existence. It is possible to influence endogenous processes of movement preparation externally without disrupting the conscious perception of volition.

PMID: 1431962 [PubMed - indexed for MEDLINE]

Electrophysiologic studies in leprosy.

Brasil-Neto JP.

Neurologist and Clinical Neurophysiologist, Hospital for Diseases of the Locomotor System, Sarah, Brasilia, DF, Brazil.

The author reviews the literature on electromyography and nerve conduction velocity studies in leprosy. It is concluded that these studies can be helpful in the early diagnosis of neural involvement, in the elucidation of pathophysiological mechanisms, and in the follow-up of patients under medical and/or surgical treatment.

Publication Types:

- Review
- Review, Tutorial

PMID: 1339202 [PubMed - indexed for MEDLINE]

21: Brain. 1992 Aug;115 (Pt 4):1045-59.

[Related Articles,](#) [Lit](#)

Effects of focal transcranial magnetic stimulation on simple reaction time to acoustic, visual and somatosensory stimuli.

Pascual-Leone A, Valls-Sole J, Wassermann EM, Brasil-Neto J, Cohen LG, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, Bethesda, MD 20892.

In a simple reaction time (RT) paradigm, magnetic stimulation of different intensities was delivered over different scalp positions and at variable delays before (negative) or after (positive) the go-signal. Magnetic stimulation shortened RT to different go-signals (auditory, visual and somatosensory stimuli) by approximately 30 ms when delivered over the motor cortex contralateral to the responding arm at intensities below motor threshold. This effect was maximal at a delay of approximately +10 ms. A similar effect was found with suprathreshold stimulation to the ipsilateral motor cortex. Magnetic stimulation over other scalp areas did not affect RT regardless of the delay. No differences were found between the effects on elbow flexion and thumb abduction. The shortening of RT was not associated with changes in the timing development of premovement excitability increase in the motor cortex. We conclude that magnetic stimulation shortens RT by inducing an earlier initiation of this excitability increase.

PMID: 1393501 [PubMed - indexed for MEDLINE]

22: Neurology. 1992 Jul;42(7):1302-6.

[Related Articles,](#) [Lit](#)

Rapid reversible modulation of human motor outputs after transcranial magnetic stimulation of the forearm: a study with transcranial magnetic stimulation.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

Reorganization of corticospinal pathways after spinal cord injury and amputations leads to increased excitability of motor pathways targeting muscles proximal to the level of interruption of efferents from the CNS. To study the timing of these changes, we have recorded motor evoked potentials (MEPs) in the arm muscles of three normal subjects before, during, and after anesthetic block of the forearm and hand. The amplitudes of MEPs from biceps, which was the muscle immediately proximal to the block, gradually increased with anesthesia and then returned to preanesthesia levels within approximately 20 minutes after anesthesia was ended. MEPs from the contralateral arm were unaffected. Such rapid changes strongly suggest unmasking of preexisting synaptic connections, due to disinhibition at cortical or subcortical levels, as the mechanism underlying acute modulation of motor outputs.

PMID: 1620338 [PubMed - indexed for MEDLINE]

▣ **23:** Arq Neuropsiquiatr. 1992 Jun;50(2):141-6.

[Related Articles](#), [Lit](#)

[Critical re-evaluation of the usefulness of evoked potentials in clinical neurology]

[Article in Portuguese]

Brasil-Neto JP.

Neurologista e Neurofisiologista Clinico, Hospital das Doencas do Aparelho Locomotor, Hdal-Sarah, Brasilia.

Publication Types:

- Review
- Review, Tutorial

PMID: 1308380 [PubMed - indexed for MEDLINE]

▣ **24:** Lancet. 1992 Apr 18;339(8799):997.

[Related Articles](#), [Lit](#)

Seizure induction and transcranial magnetic stimulation.

Pascual-Leone A, Valls-Sole J, Brasil-Neto JP, Cohen LG, Hallett M.

Publication Types:

- Letter

PMID: 1348836 [PubMed - indexed for MEDLINE]

No evidence of hearing loss in humans due to transcranial magnetic stimulation.

Pascual-Leone A, Cohen LG, Shotland LI, Dang N, Pikus A, Wassermann Brasil-Neto JP, Valls-Sole J, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

Prompted by the description of hearing loss in rabbits exposed to the acoustic artifact of magnetic stimulation, we compared the results of audiologic studies before and after exposure to transcranial magnetic stimulation in humans. We found no evidence of temporary or permanent threshold shifts in any of the subjects, even in those exposed to transcranial magnetic stimulation repeatedly for several years. Risk of hearing loss from the acoustic artifact of magnetic stimulation, as evaluated by audiograms, tympanograms, acoustic reflexes, and auditory evoked potentials, seems to be small in humans.

PMID: 1549231 [PubMed - indexed for MEDLINE]

26: Brain. 1992 Feb;115 Pt 1:109-22.

[Related Articles](#), [Lir](#)

Simple reaction time to focal transcranial magnetic stimulation. Comparison with reaction time to acoustic, visual and somatosensory stimuli.

Pascual-Leone A, Brasil-Neto JP, Valls-Sole J, Cohen LG, Hallett M.

Medical Neurology Branch, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

We studied the effect of different go-signals on the reaction time in nine normal human subjects trained to respond by rapidly flexing one arm. Reaction times to auditory stimuli were shorter than those to visual or somatosensory stimuli, and were inversely correlated with the stimulus intensity. The reaction time was longest to a transcranial (magnetic or electric) stimulus delivered over the contralateral motor cortex that was sufficiently strong to induce a motor evoked potential in the responding biceps. Conversely, reaction time was shortest to either subthreshold transcranial stimulation over the same scalp position or to transcranial stimulation over the ipsilateral motor cortex regardless of intensity. Suprathreshold transcranial stimulation to the motor cortex seems to transiently inhibit the neurons responsible for initiation of motor programs involving muscles in which motor evoked potentials have been induced, thereby prolonging the reaction time. On the other hand, a subthreshold stimulus either disinhibits or directly activates such neurons leading to a shorter reaction time. Transcallosal connections between the motor cortices may account for the short reaction time to ipsilateral transcranial stimulation.

PMID: 1559148 [PubMed - indexed for MEDLINE]

27: Electroencephalogr Clin Neurophysiol. 1992 Feb;85(1):9-16. [Related Articles](#), [Lir](#)

Topographic mapping of the human motor cortex with magnetic

Brasil-Neto JP, McShane LM, Fuhr P, Hallett M, Cohen LG.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD 20892.

We recorded motor evoked potentials (MEPs) from deltoid, biceps brachii, abductor pollicis brevis and flexor carpi radialis muscles of 5 normal volunteers during transcranial magnetic stimulation. With the subjects at rest, an 8-shaped magnetic coil was used to deliver 30 stimuli to different scalp positions 0.5 or 1 cm apart. The variability in amplitude and latency of MEPs was studied as a function of the scalp position stimulated, the number of stimuli at each position and the percentage of maximal peripheral M responses (%M) elicited. The results were used to estimate the optimal number of stimuli at each position and the optimal spacing of scalp positions for topographic mapping of the human motor cortex. The amplitude and latency variability of MEPs were higher when suboptimal scalp positions were stimulated. Consequently, a larger number of stimuli were required to determine representative MEP amplitudes at suboptimal positions. In addition, there was an inverse relationship between %M recruited by transcranial magnetic stimuli in different subjects and the variability in MEP amplitude and latency. Latency variability was less pronounced than amplitude variability. Optimal sampling conditions are required to produce the best topographic maps, particularly to show subtle reorganization patterns in the human motor cortex.

PMID: 1371748 [PubMed - indexed for MEDLINE]

28: J Clin Neurophysiol. 1992 Jan;9(1):132-6.

[Related Articles](#), [List](#)

Optimal focal transcranial magnetic activation of the human motor cortex: effects of coil orientation, shape of the induced current pulse and stimulus intensity.

Brasil-Neto JP, Cohen LG, Panizza M, Nilsson J, Roth BJ, Hallett M.

Human Cortical Physiology Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland 20892.

We studied the effects of coil orientation, stimulus intensity, and shape of the induced current pulse on the amplitudes of motor evoked potentials in the left abductor pollicis brevis of 10 normal adults who had transcranial magnetic stimulation. The optimal direction of currents induced in the brain is approximately perpendicular to the central sulcus, flowing diagonally from back to front. The most effective coil orientation depends on the shape of the induced current pulse and, when the first and second phases of the pulse are of similar size, also on the intensity of stimulation. Optimal mapping of the human motor cortex with magnetic stimulation requires knowledge of the influences of all these factors.

Publication Types:

- Review
- Review, Tutorial

PMID: 1552001 [PubMed - indexed for MEDLINE]

[Evoked potentials in multiple sclerosis: recent experience at the Locomotor System Diseases Hospital]

[Article in Portuguese]

Brasil-Neto JP.

Hospital das Doencas do Aparelho Locomotor, HDAL-SARAH, Brasilia.

Description of main abnormal findings in eight patients with a suspected diagnosis of multiple sclerosis who underwent multimodality evoked potentials studies at HDAL-SARAH--Hospital for Diseases of the Locomotor System, in Brasilia--, during three years (1987-1989). Four of those patients have also been studied with magnetic resonance imaging techniques, and in all of them the results were also typical of demyelinating disease of the central nervous system. The most useful evoked potentials were pattern-shift visual (VEP) and somatosensory (SSEP), which yielded much more information than did brainstem auditory (BAEP) components. This is in agreement with results previously described in the literature. It is concluded that multimodality evoked potentials studies are an easily obtainable and valuable diagnostic tool in multiple sclerosis.

Publication Types:

- Case Reports

PMID: 1810240 [PubMed - indexed for MEDLINE]

30: Arq Neuropsiquiatr. 1991 Jun;49(2):180-4.

Related Articles, Lit

Median nerve somatosensory evoked potentials: studies on latency variability as a function of subject height, limb length and nerve conduction velocity.

Brasil-Neto JP.

Hospital for Diseases of the Locomotor System-SARAH, Brasilia, Brasil.

Report on the results of regression analysis studies concerning median nerve somatosensory evoked potentials (SEPs) latencies, as dependent variables, and subject height, limb length and nerve conduction velocity (NCV), as independent variables. The tests were performed on 23 normal volunteers. Absolute SEP latencies could be predicted by a linear regression model when the independent variable was arm length; when it was subject height, however, both exponential and polynomial models proved better, the latter showing the best coefficients of determination, R^2 . Multiple linear regression with two independent variables (arm length and NCV) was found to be better than simple linear regression for predicting P/N13 latency. The regression line for EP-P/N13 latency on height was found to be a polynomial curve; although the regression was found to be significant by the "F" test ($\alpha = 1\%$), the model had a low R^2 value (0.41). The same applies to the P/N13-N19 interpeak latency regression curve, but the regression was significant for $\alpha = 5\%$ in that case. Although interwave latencies are the most useful parameters for clinical interpretation of median SEPs, absolute latencies may occasionally be important, and should be corrected for body size. In unusually tall subjects, it might be useful to double-check EP-P/N13 interwave latency prolongation by estimating the maximum expected P/N13 latency, using a model that takes into account both limb length and NCV.

31: Arq Neuropsiquiatr. 1989 Dec;47(4):423-9.

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**[Multimodal evoked potentials: standardized study of 51 individ
in a Brazilian population]**

[Article in Portuguese]

**Brasil-Neto JP, Kouyoumdjian JA, Kouyoumdjian NC, Fernandez RN, Fe
JC.**

Setor de Neurofisiologia Clinica, Hospital de Medicina do Aparelho Locomotor
SARAH, Brasilia DF, Brasil.

The authors report the results of normative studies of pattern-shift visual,
brainstem auditory and somatosensory evoked potentials of upper and lower
limbs carried out in a sample of 51 normal subjects of a Brazilian population.
Normal values were thus established for the main components of each modality
of evoked potentials, with special emphasis on those having more clinical utility.
The results were compared to the data available in the literature.

PMID: 2634383 [PubMed - indexed for MEDLINE]

32: Arq Neuropsiquiatr. 1986 Mar;44(1):82-8.

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**[Bilateral palpebral ptosis with unilateral paralysis of upward g
case report]**

[Article in Portuguese]

Brasil Neto JP, Tosta ED, Henriques FG.

The authors report a case of bilateral ptosis with miosis, paralysis of upward g
and of smooth pursuit movements to the right, as well as a slowly regressive sta
of lassitude. This syndrome followed a haemorrhagic brain stem infarction. Afte
a review of the pathophysiology of ptosis and of vertical eye movements,
together with analysis of data provided by computerized tomography
studies--since the case was not fatal--explanations are offered for each clinical
sign and it is proposed that the lesion, a paramedian, slightly deviated to the rig
haemorrhagic focus in the midbrain, with a diameter of 15 mm, might have
involved several structures, namely the rostral interstitial nucleus of the medial
longitudinal fasciculus, the mesencephalic reticular formation, as well as
cortico-nuclear and sympathetic pathways.

Publication Types:

- Case Reports

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