

**ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL
THERAPY DEPARTMENT FOR NEUROMUSCULAR AND
NEUROSURGICAL DISORDER AND ITS SURGERY**

PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED

Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and Its Surgery

Doctoral Degree 2017

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Title	:	Effect of vestibular rehabilitation program on fatigue in patients with multiple sclerosis
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Degree	:	Doctoral.
Year	:	2017.
Abstract	:	
<p>Background: Fatigue is a multidimensional and complex symptom. It is the most common disabling symptom in patients with multiple sclerosis (MS) and has a significantly negative impact on their quality of life. The MS-related fatigue is most probably of central origin and could be attributed to the impaired sensorimotor integration and processing. The vestibular rehabilitation therapy (VRT) is based on the sensorimotor integration strategies and showed positive effects on many symptoms (eg. vertigo, depression, anxiety, depression), however its influence on MS-related fatigue is poorly studied. Purpose: This study was aiming to investigate the benefits of implementing a designed VRT for the purpose of decreasing fatigue in patients with remitting-relapsing MS (RRMS). Subjects and Methods: This randomized controlled trial included 36 patients with RRMS; 13 in the control group and 23 in the study group with matched general and clinical characteristics. All patients were treated for four successive weeks (12 therapeutic sessions). Both groups had been treated by aerobic exercises using stationary bicycle endurance training with intensity of 65% to 75% of the age predicted maximum heart rate (MHR). The study group had received a designed VRT in addition. Outcome measures included the fatigue severity scale (FSS), timed 25-foot walk (T25-FW) test, the Paced Auditory Serial Addition Test "PASAT" during three and two seconds (PASAT#3 and PASAT#2), and the relative power ratio between slow to fast waves of quantitative electroencephalogram (QEEG) activity using the equation $[(\theta+\alpha)/\beta]$ over C3, C4, Fz and Pz sites. Results: The FSS showed significant improvement in both groups; the control (95% CI 31.86 - 43.67, P=0.022*) and the study (95% CI 28.41 - 37.49, P=0.026*). The T25-FW test showed a non-significant difference in either group post-treatment. The PASAT#3 and PASAT#2 showed a significant increase in the control (95% CI: 23.21- 33.17, P=0.035* and 95% CI: 20.51- 30.56, P=0.017*, respectively) and the study groups (95% CI: 27.94 - 35.6, P=0.0001* and 95% CI: 23.56- 31.29, P=0.001*, respectively). The QEEG showed significant improvement of the $[(\theta+\alpha)/\beta]$ ratio post-treatment over C3 in both groups; the control (95% CI: 1.82 - 2.97, P=0.038*) and the study (95% CI: 1.64 - 2.53, P=0.0001*) groups with remarkable improvement in the study group (P=0.032*). The ratio over the sites C4 and Fz only improved in the study group where p-values were (95% CI: 1.81- 3.07, P=0.024*) and (95% CI: 1.79 - 2.98, P=0.0001*), respectively. There was no significant change over the site Pz in both groups. Conclusion: VRT is effective in facilitating the sensorimotor integration and consequently reducing fatigue perception and improving cognitive processing speed in patients with MS.</p>		
Key words	1.	Vestibular rehabilitation therapy
	2.	Fatigue
	3.	quantitative electroencephalogram
	4.	Multiple Sclerosis
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Author	:	Mahmoud YassinElzanatyRezk
Title	:	Effect of Reciprocal Pedaling Exercise on Cortical Reorganization and Gait in Stroke Patients
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Degree	:	Doctoral.
Year	:	2017.
Abstract	:	<p>Background:Gait disturbances can cause substantial impairmentto the quality of life in stroke patients.The aim of this studyis to determine the effect of reciprocal pedaling exercise on cortical reorganizationand its consequences on the spatiotemporal parameters of gait in stroke patients. Methods:Forty ischemic strokemale patients with age ranging from 45 to 60 years. They were assigned randomly into two equal groups; control group (G1) and study group (G2). G1 treated by a design physical therapy program and G2 treated by the same program in addition to reciprocal pedaling exercise. Treatment was conducted three times per week for ten weeks. The cortical reorganization was assessed by the quantitative electroencephalogram (QEEG).The spatiotemporal parameters of gait were assessed by the Biodexgait trainer 2TM and timed ten meters walking test. Results: There were a significant increase of cortical reorganization over midline central and frontal areas (Cz&Fz) and a non significant over midline parietal area (Pz)in the study group as comparedto the control group. A significant increase in the mean values of ten meters walking test and all tests of Biodex gait trainer 2TM except step length of the affected sideand percentage of time on the non and affected foot in the study group as comparedto the control group. Conclusion: Reciprocal pedaling exercise has a positive effect on cortical reorganizationand consequences on improving gait parameters in stroke patients.</p>
Key words	1.	Strok
	2.	Reciprocal pedaling exercise
	3.	Gait in Stroke Patients
	4.	Cortical reorganization.
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Author	:	Tahani Fathi Mousa Mousa
Title	:	The effect of different frequencies of transcranial magnetic stimulation on cognitive function in stroke patients
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Degree	:	Doctoral.
Year	:	2017.
Abstract	:	
<p>Background: Repetitive transcranial magnetic stimulation (rTMS) holds promise as therapeutic tool for cognitive impairment following cerebrovascular stroke. Purpose: The aim of this study was to evaluate the effect of different frequencies of repetitive transcranial magnetic stimulation (rTMS) combined with aerobic exercise on improvement of cognitive functions in chronic stroke patients. Subjects and Methods: Thirty right handed stroke patients with right sided hemiparesis of both gender participated in the study. The patients were randomly assigned into three equal groups, group (I): received (10 Hz) frequency of rTMS combined with aerobic exercise and physiotherapy program, group (II): received (5Hz) frequency of rTMS combined with the same aerobic exercise and physiotherapy program and group (III): received the same aerobic exercise and physiotherapy program. All patients were evaluated using Addenbrooke's Cognitive Examination Revised test(ACE-R) for assessment of cognitive functions and Transcranial Doppler (TCD)for assessing blood flow velocity in MCApre and post treatment. Results: There was significant improvement in the total score of ACE-R test post treatment in the three groups especially in group (I) with a percentage of improvement (33.5, 25and 10.1% respectively). Groups (I,II) showed significant improvement of nearly all domains of cognitive functions especially (Memory-recall, Language-repetition and Visuospatial abilities) post treatment .There was significant increase in right and left MCA blood flow velocity within the three groups post treatment and there was a significant difference between the three groups in left MCA blood flow velocity after treatment. There was a significant correlation between improvement of MCA blood flow velocity and improvement of total score of ACER test in G(I and II), but not in GIII(P=0. 534).Conclusion: Repetitive transcranial magnetic stimulation (rTMS) especially at high frequency has a significant beneficial effect on improving cognitive functions in chronic stroke patients when added to the conventional physiotherapy program. This improvement can be can be partly attributed to improvement of cerebral blood flow especially ipsilateral to the vascular insult.</p>		
Key words	1.	Stroke
	2.	Magnetic Stimulation
	3.	Aerobic exercise
	4.	Transcranial Doppler
	5.	Cognitive functions
	6.	repetitive Transcranial
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