

abnormality based on differences between the two PCA. The method reduces gait to a sequence of synergies with strongly expressed temporal and spatial components. We present the example where normal gait (averaged stride cycles from recorded sequence) is represented by a characteristic closed-pattern figure resembling to a letter D. Another parameter obtained from analysis, mutual position of Pearson's correlation coefficients defines synergistic motion of leg segments. If gait pattern is modified, gait will be represented with distorted shapes whose distortion level is correlated with severity of gait disturbance. Also, different mutual positions of correlation coefficients may indicate joints that provoke a disturbed control and directly affect gait quality.

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18. Event related desynchronisation/synchronisation based method for quantification of neural activity during self-paced versus cue-based motor task—A. Savić^a, M. Popović^{a,b,c}, DB. Popović^{a,c} (^aElectrotechnical Faculty of Belgrade University, Belgrade, Serbia, ^bInstitute of Multidisciplinary Research, Belgrade, Serbia, ^cCenter for Sensory Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University, Denmark)

The patients' motivation for therapy can be enhanced with virtual reality-based feedback, which transforms non-purposeful movement tasks to purposeful, goal-oriented movements. The purpose of this study was to explore the differences in neural activity of the motor cortex during the executions of the identical motor task in a self-paced and a cue-based, goal-oriented manner. Event Related Desynchronisation/Synchronisation (ERD/ERS) of the scalp EEG served as a measure of neural activity during task execution. Five healthy subjects participated in this study. They performed multiple switch pressing movements of the right thumb, in a self-paced and a cue-based manner. In the self-paced paradigm subjects pressed the switch in their own pace. In the cue-based paradigm a slider with an exponential growth was presented to the subject on the computer screen. Subjects' goal was to perform the task, trying to press the switch at the exact moment the level of the slider reaches its maximum. Averaged time-frequency images showed differences in ERD/ERS patterns during the execution of self-paced and cue-based tasks. We assume that observed differences derive from the fact that cue-based tasks required planning and higher temporal precision, resulting in increased cortical excitability.

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19. Motor and sensory evoked potentials disturbances in Leber's hereditary optic neuropathy—J. Jančić (Clinic for Neurology and Psychiatry for Children and Youth, Medical Faculty, University of Belgrade, Belgrade, Serbia)

Evoked potentials represented nervous system electrical activity, elicited by sensory stimulation. Depending on stimulation type it is possible to register different evoked potentials modality and perform sensory pathway functional examination respectively. Somatosensory evoked potentials reflect different levels neuraxis condition, from peripheral nerve, across spinal cord, brain stem and thalamus, through thalamo-cortical projections to cerebral cortex. This technique is noninvasive, objective in measurement and evaluation of central nervous system functionality, monitoring central nervous system disturbances and damages, with prognostic value for

impaired functions. Normal motor functioning, including learning and motor skills, requires adequate sensory input and its integration, with consequent neurological impairment in case of sensory pathway disturbances. These parameters comparison in some neurological conditions as a Leber's hereditary optic neuropathy (LHON) concluding sensory pathway preservation and based on motor evoked potentials due to muscle contraction or motor conduction, we can conclude functional state of neuraxis, i.e. motor and sensory potentials impairments in LHON. Our results suggest multisystemic involvement in seemingly monosymptomatic disorder.

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20. Prognostic value of cardiovascular autonomic control impairment for onset of respiratory insufficiency in patients with amyotrophic lateral sclerosis—S. Pavlovic^a, B. Milovanovic^a, Z. Stevic^b, B. Milicic^c, V. Rakocevic-Stojanovic^b, D. Lavrnic^b (^aClinical Center Bezanijska Kosa, Serbia, ^bClinical Center of Serbia, Belgrade, Serbia, ^cInstitute of Medical Statistics and Informatics, School of Dentistry, Belgrade, Serbia)

Objective: The purpose of this study was to assess the significance of cardiovascular autonomic dysfunction for onset of respiratory insufficiency.

Methods: Fifty five patients with sporadic ALS (28 women and 27 men; average age 56.00 ± 10.34) comprised the study group. Patients with history of cardiac disease, impaired respiratory function and ALSFRS-R score below 35 were excluded. Cardiovascular autonomic reflex tests according to Ewing, 10 min real time beat-to-beat ECG and blood pressure monitoring with HRV analysis at rest and baroreceptor function analysis were carried out in all patients at the beginning of the study. Time domain parameters of HRV and mean RR interval were obtained from 24-h ECG monitoring. The follow-up period was 38 months. Onset of respiratory insufficiency was defined as expected FVC% < 80%. Univariate and multivariate analyses were performed using the Cox proportional hazard model.

Results: Pathologic responses to Ewing's tests of parasympathetic function, high scores of parasympathetic dysfunction and overall autonomic dysfunction, reduced SDNN index and baroreflex sensitivity were univariate risk factors for onset of respiratory insufficiency.

Conclusions: Our results suggest that reduced parasympathetic activity, HRV and baroreflex sensitivity are associated with respiratory failure in ALS. Central respiratory dysfunction and cardiorespiratory uncoupling could strongly contribute to respiratory failure in ALS.

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21. Esophageal and anorectal manometry in the diagnosis of functional esophageal and anorectal disorders—I. Jovanović, M. Cvetković, G. Nikolić, D. Al Kiswani, N. Milisavljević, M. Branković, T. Lukić, N. Milinić (Department of Gastroenterology, Clinical Center Bežanijska Kosa, Belgrade, Serbia)

Esophageal manometry is a diagnostic procedure used for functional analysis of upper esophageal sphincter (UES), lower esophageal sphincter (LES) and body of esophagus. At the level of UES and LES we measure resting pressure and relaxation during wet swallow sequence analysis. This procedure provides a powerful tool in the diagnosis of primary esophageal disorders such as primary achalasia, diffuse esophageal spasm, nutcracker esophagus,