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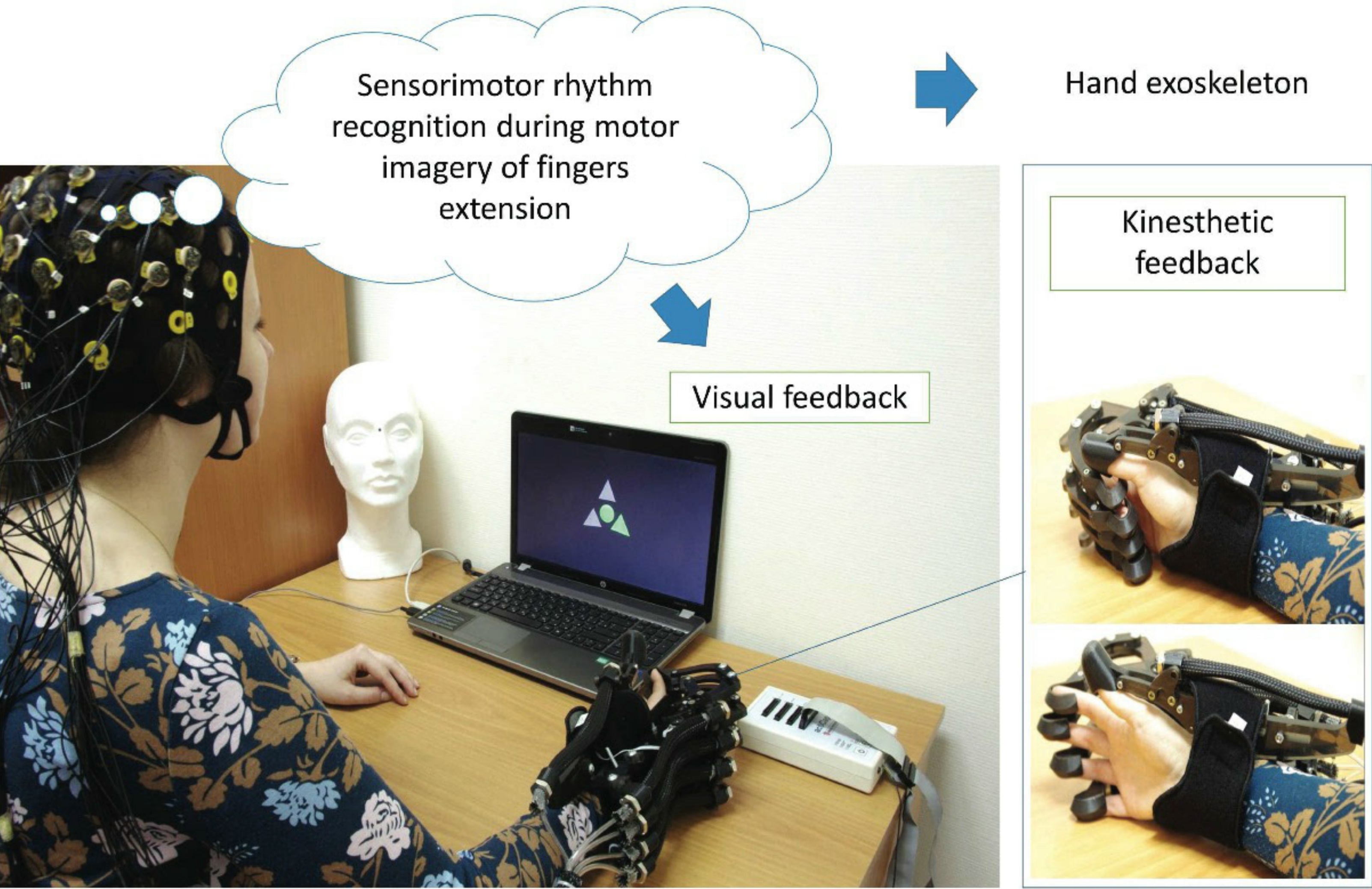
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Motor imagery – neuropsychological predictors of failure in post stroke patients

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Introduction: According to the Guidelines for adult stroke rehabilitation and recovery, mental practice (MP) with motor imagery (MI) paradigm is reasonable to consider as an adjunct to upper extremity rehabilitation services (A level of evidence). Cognitive decline is common in post-stroke patients and can be significant limitation for MP. And the issue of the cognitive capacity required to perform MP is still open. **Objectives:** The aim of this study is to reveal particular features of cognitive decline which make mental practice, a priori, ineffective or unsustainable for post stroke patients. **Materials and methods:** 12 hemiplegic patients after first-time stroke (mean age 51±14, time from onset range 7±6 months) were enrolled to the study. The mean degree of arm paresis was 14 out of 66 points measured by motor subscale of Fugl-Meyer Assessment of Motor Recovery after Stroke (FMA) for upper extremity (UE) and 9 out of 57 according to Action Research Arm Test (ARAT). The Kinesthetic and Visual Imagery Questionnaire (KVIQ) and Hand Laterality Judgment Task (HLJT) were used to assess explicit and implicit MI ability respectively. All participants were examined using Luria neuropsychological examination and assessment, including praxis, gnosis, visuospatial functions, memory, attention, executive functions, intelligence. After assessment patients were trained to imagine kinesthetically wrist and finger extension under control of a brain-computer interface (BCI) with the feedback presented via an exoskeleton. BCI used in the study is noninvasive and based on sensorimotor rhythm event-related desynchronization (ERD). Patients underwent 20 training sessions lasting up to 15 min. The motor function of UE measurement and were obtained after intervention. Offline EEG data analysis and statistical data processing were performed. **Results:** Significant gains in FMA and ARAT scores (p<0,05) were observed in the group after course of motor rehabilitation with MP inclusion. No correlation was found between improvement in motor scales and classification accuracy rate, which follows the idea that clinical benefit depends largely on severity of initial motor deficit. Scores of KVIQ didn't correlate with objective criteria of MI ability. Revealed correlations between neuropsychological and classification accuracy level allowed to highlight those features of cognitive impairment related to low ability to operate EEG-based MI-BCI. So the features are as follows: visuospatial difficulties, represented in fragmentary perception strategy and metrical mistakes occurrence; executive functions deficit, which appears in planning and organization domains such as formation and retention of plan for action or movement; decrease in energetic and neurodynamic supply of mental activity. **Conclusion:** Specific cognitive impairment mentioned above may serve as predictor of low efficacy of MP.



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Post-traumatic stress disorder and the quality of life in stroke survivors

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Background and aim: Approximately 3% - 30% of stroke patients experience Posttraumatic Stress Disorder (PTSD). However, little is known about the factors that contribute to PTSD and about the influence of PTSD on the quality of life (QoL). Therefore, we aimed to identify determinants of PTSD among socio-demographic and clinical variables and to assess the relationships between PTSD and QoL in ischaemic stroke survivors. **Methods:** PTSD was measured with the use of Impact Event Scale (IES), quality of life with EQ – 5D – 3L, stroke severity with National Institutes of Health Stroke Scale (NIHSS), disability with Barthel Index (BI). The study sample consisted of 146 consecutive patients who were interviewed in their homes at 3 and 12 months after discharge from stroke unit. **Results:** Thirty six (24.6%) patients were classified as having PTSD (IES > 33 points) at 3 months and 39 (26%) at 12 months. There was no relationship between PTSD and age, gender, living arrangement, comorbidities, baseline NIHSS and discharge BI scores. More subjects with probable PTSD had poorer QoL in comparison to the non PTSD. At 3 months, 55.3% of patients reported problems in usual activity (<0.001), 80.6% experienced pain/discomfort (p=0.024), 63.8% reported anxiety/depression (p<0.001). The PTSD group scored lower on the EQ VAS (median 50 vs 55, p = 0.043). At 12 months 77% and 66% reported pain/discomfort (p=0.017) and anxiety/depression (p=0.04), respectively. **Conclusions:** PTSD was present in a substantial proportion of stroke patients irrespective of the demographic and clinical characteristics. PTSD was associated with deteriorated QoL, especially in the early months after stroke.

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The analysis of correlation between burden and caregivers needs related to providing care for stroke patients

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Background and aim: Providing care for stroke patients is related to caregiver's burden. One of the factors influencing the burden is meeting caregiver's needs related to providing care. Little is known about the burden and the needs. The aim of the study was to define the needs of the caregivers of first stroke patients and examining the correlation between the level of the burden and meeting important needs of the caregivers. **Methods:** The study included 100 caregivers of first stroke patients at 3 months following the discharge of the patients from hospital (F=77, M=23). The needs related to providing care were measured using the Family Needs Questionnaire (FNQ). The level of the importance of the needs was assessed (scale 1-4 points) and the level of meeting the needs which were perceived as important (scale 0-1). The level of the burden was assessed using Caregiver Burden Scale (CB scale). **Results:** The average age of the caregivers was 52.73 (±SD 9.89) years. Most of the caregivers were spouses of the patients (48%) and their children (42%), active professionally (47%). The general result of the importance of the needs was 3.18 for the whole scale. For the four out of six subscales the result was above 3.0. This means that most of the needs related to providing care were assessed as "important/very important". The most important were the following needs: "health information" (3.61, SD 0.30) and "professional support" (3.27, SD 0.49), and the least important: "involvement with care" (2.57, SD 0.64). The general result of the level of meeting needs among the important needs in the whole scale was 0.52, SD 0.23, which means that the needs were met in about 50%. The highest result was in the subscale: "health information" (0.75, SD 0.24) and "community support network" (0.60, SD 0.36), and the lowest in the subscale "instrumental support" (0.31, SD 0.31). A correlation was indicated between the level of meeting needs for the whole scale FNQ and the general result in scale CB (r= -0.58 p<0,05). **Conclusions:** The most significant needs of the caregivers of stroke patients at a few months after their discharge from hospital are: health information and professional support. The level of meeting these needs was not sufficient. It was established that the lower the level of meeting the needs, the higher the level of the caregivers' burden.