Bimanual coupling in stroke patients and its applications for rehabilitation in occupational therapy

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Background.– Although the majority of functional activities implicate both upper-limbs, the assessment and rehabilitation of bimanual synergies remain largely neglected following a cerebrovascular accident (CVA). This issue is notably important knowing that more than half of stroke patients suffer from upper-limbs, the assessment and rehabilitation of bimanual synergies remain largely neglected following a cerebrovascular accident (CVA). This issue is notably important knowing that more than half of stroke patients suffer from functions deficits. Following an initial phase of traditional rehabilitation, patients underwent a specific rehabilitation program for a period of 6 months. The rehabilitation program consists in warming-up unimanual exercises, followed by bimanual exercises designed to stimulate the expression of coupling. It includes also bimanual exercises that were inspired from daily living activities. Assessment sessions are planned at pre-, mid-, and post-rehabilitation. An additional assessment session is also scheduled following a retention period. Assessments included a kinematic testing wherein kinematic variables were acquired via a digitizer, and a clinical evaluation including functional tests.

Results.– Preliminary results show an alteration in bimanual interactions following stroke, which related to the severity of the lesion. This alteration seems, however, to be more or less reversible following a proper intervention. Discussion.– We suggest a simple protocol whose aim is to re-establish bimanual coupling and readapt functional synergies involving upper-limbs. Our preliminary results are encouraging and open doors to further investigations.

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Integration and evaluation of a lexical prediction engine in a virtual keyboard support on text input for people with mobility impairments

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Purpose.– Information technologies play a large role in both the social and professional lives of individuals. Text input using assistive devices allowing computer access for disabled people is often slow. The aim of this study was to evaluate the effect of a dynamic on-screen keyboard (custom virtual keyboard [CVK]) and a word prediction system (Sybille) on text input speed in patients with functional tetraplegia.

Methods.– Ten patients tested four modes in their homes (Standard, Standard + Word, Dynamic and Dynamic + Word) for one month before choosing one and continuing to use it for another month.

Results.– The results suggested that the effect of the word prediction system on text input speed was very variable across subjects. Only the patient who used a scanning system appeared to benefit. The same was found for the dynamic keyboard.