

Effects of Augmented Feedback on Motor Learning – Do Neurologically Impaired Patients Follow the Same Principles as Healthy Subjects ?

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Background and Purpose: Motor learning is a set of processes associated with practice or experience leading to relatively permanent changes in the capability for movement. Extrinsic, augmented feedback has been shown to enhance motor learning in healthy subjects and subjects had better learning effect under low feedback frequency. Since learning involves central mechanisms, it is unclear as to whether patients suffered from neurological impairment would benefit from augmented feedback as healthy subjects do. The purpose of this article was to systematically review evidence regarding the effects of augmented feedback and the frequency of augmented feedback on motor skill learning in neurologically impaired patients. **Method:** The PubMed and Medline electronic database between 1966 and Jan 2006 were searched. Original articles including both patient and control groups and meeting the topics of interest were selected. A total of eight articles were included in this review. **Results:** The results have revealed that neurologically impaired patients demonstrate some ability to learn a motor skill as healthy subjects, but their learning abilities depend on the types of task and feedback. Patients with stroke and those with traumatic brain injury demonstrate better learning effect when giving augmented feedback. However, the motor learning ability of Parkinsonian patients suffered from withheld of augmented feedback when learning complex motor skills. In addition, Patients with stroke and those with traumatic brain injury had better learning effects under decreased feedback frequency condition, but the Parkinsonian patients are not. **Conclusion and Discussion:** Due to the differences in research design among the studies reviewed, and the limited number of studies included in this review, conclusive remarks on the effects of augmented feedback and its frequency on motor learning in patients with different neurological disorders are difficult to reach. Nevertheless, this review suggests that many patients with neurological disorders preserve motor learning ability to some extent and that the use of augmented feedback may be particularly beneficial to some of them. (FJPT 2006;31(4):252-260)

Key Words: Augmented feedback, Motor learning, Frequency of feedback, Neurologically impaired patients

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