

## 2<sup>nd</sup> International Conference and Exhibition on **Physical Medicine & Rehabilitation**

July 14-16, 2014 DoubleTree by Hilton Baltimore-BWI Airport, USA

### Brain-computer interface entertainment for cerebral palsy rehabilitation

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Some disabled patients with cerebral palsy (CP) have lost their ability to control parts of their body's function and are unable to perform even very simple daily. Brain computer interface (BCI) is a technology that provides a direct communication pathway between the brain and an external device, and is an ideal way of helping individuals with this kind of disability. This project is to provide a series of brain computer interface games to patients with CP. In this study, 5 patients with CP (3 males and 2 females, age from 12 to 19 years old) were invited to play computer games by using MindFlex, Mindwave, Emotiv, and a custom made somatosensory BCI alternatively. A series of computer games were selected to improve attention and cognition ability. In this project, all participants showed their wishes to be able to use computer. CP patients, who received brain-computer interface entertainment, subjectively reported the improved quality of life. Even though we did not perform quantitative measurement of body movement of those patients, behavior observation showed that the engagement of BCI entertainment can help CP patients in capability of concentration and motor control. It directly benefited CP patients to resume communication with others and to resume to a certain extent their normal activities. In addition, this project further improves the usability and accuracy of brain computer interface system to CP patients.

#### Biography

Yong Hu received his BSc and MSc degrees in the Biomedical Engineering from Tianjin University, Tianjin, China in 1985 and 1988, respectively, and his PhD degree from The University of Hong Kong in 2000. He is currently an Assistant Professor, the Director of Lab of Neural Engineering and Clinical Electrophysiology, in the Department of Orthopaedics & Traumatology, The University of Hong Kong. He is also an adjunction 'Xiehe Chair Professor' of Institute of Biomedical Engineering, Chinese Academy of Medical Sciences & Peking Union Medical College. His main research area is clinical electrophysiology, neural engineering, and biomedical signal processing.

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