

Beta Activities in EEG Associated with Emotional Stress

Takuto Hayashi^{*,1}, Eika Okamoto¹, Haruhiko Nishimura¹, Hiroshi Inada¹, Ryouhei Ishii², Satoshi Ukai³, Kazuhiro Shinosaki³, Yuko Mizuno-Matsumoto¹

¹ Graduate School of Applied Informatics, University of Hyogo, Japan

² Department of Neuropsychiatry, Osaka University Graduate School of Medicine, Osaka, Japan

³ Department of Neuropsychiatry, Wakayama Medical University, Wakayama, Japan

Received Date: 11 July 2009; Accepted Date 17 September 2009

Abstract

The aim of this paper is to assess whether objective time-course physiological responses from electroencephalogram (EEG) and electrocardiogram (ECG) can quantify stress level or not. Physiological signals were measured under emotional stress tasks using audio-visual stimuli and analyzed with a discrete Fourier transform (DFT). The results showed that beta activities in the frontal and temporal areas of the Non-Stress Group were significantly larger than those of the Stress Group under emotionally unpleasant stimuli. Also, the beta activities of the Non-Stress Group decreased with time. These events suggest that people with less stress have a high stress-resistance potential in their brain activities, which can be seen as general biological reactions.