Electroencephalographic Assessment of Mental Fatigue on Visual Tasks

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ABSTRACT

This paper employed a method to evaluate mental fatigue induced during visual tasks using electroencephalography (EEG) power indices and P300 component of event-related potential (ERP). The visual tasks were performed for 60 min of mental arithmetic and 120 min of data entry via computer. The EEG measures were conducted and the ERPs induced from a modified flanker task were acquired on twenty subjects during the three test sessions. Behavior response and EEG measurement were recorded on a personal computer. The results indicated the subjects appeared predominantly mental fatigue after three hours of visual tasks. After 60 min of rest, the participants’ fatigue did not diminish to original state except in the visual area. The method proposed in this study is potentially applicable to evaluate the fatigued state of workers and to manage the mental fatigue from the viewpoints of occupational risk management, productivity, and occupational health.

Keywords: Mental fatigue; Visual task; Electroencephalography; Event-related potential