ABSTRACT

Human eye health problems due to uncontrolled use of gadgets can cause eye fatigue. However, medical devices for diagnosing the electrical activity of the eye muscles have received less attention. This study designed a tool that can monitor the electrical eye muscles (EOG) equipped with a neck angle elevation meter, to see if there is a difference in signal when someone is working in front of a computer screen at a certain angle elevation. This study designed an EOG module consisting of an instrument amplifier, a pre amplifier circuit, a high pass filter, a low pass filter, a summing amplifier, and a notch filter. In this study, the lead points are at the vertical point and the horizontal point of the eye using disposable electrodes. The frequency of the signal used is 0.5-30 Hz. The output results were compared with KandH as a standard tool. From this study, the MPF (mean power frequency) value of several angle conditioning of the respondents was obtained, namely in the vertical position of the neck angle elevation 0°; 0.038927.30°; 0.034139, 60°; 0.032203, in the horizontal position the neck angle elevation is 0°; 0.037355, 30°; 0.033409.60°; 0.028298. For conditioning carried out on respondents, all respondents experienced a decrease in amplitude with an elevation of the neck angle of 60°. Thus, it can be concluded that the elevation of the neck angle affects the electrical power of the eye muscles. For further development, an alarm or eye fatigue indicator can be added.

Keywords: EOG, MPF, Elevation