ABSTRACT

This research is related to the design of the neck posture monitoring device for device users. The use of devices with bad neck posture can cause text neck disease. Text neck is a term used to describe the continuous pain caused by the neck by looking at the device with the neck bent down for too frequent and too long periods. The sensor module used in this research is the MPU6050. The MPU6050 consists of a gyroscope sensor and an accelerometer sensor that measures the parameters of the neck posture degree angle. The MPU6050 is placed on the C7 of the back of the device user's neck. The starting point of the MPU6050 is when the neck posture is upright, and the angle of degrees increases when the neck bends downward. Used a vibrating coin actuator and a led light which will pass the neck posture degree angle exceeding the 15^0 threshold for 1 minute. Equipment testing is done by comparing the values with a goniometer. When tested on the test module the equipment produces a linear calibration chart, but when tested on one of the instrument's testers, the measurement error is below the neck posture angle of 30^0.This research was conducted on 6 different participants and carried out in 3 sessions, namely 25 minutes of testing sessions, 5 minutes of resting sessions, and 15 minutes of retesting sessions. The results of the response of the examiner graph by the time of the testing session entered 1500 seconds and the biodata of the participants, namely age and habits of playing devices. The results of the survey data showed that 83.3% of participants also answered tools to increase alertness in neck posture. This uses the use of 2 actuators, namely a vibrating motor and a led light to give warning. 100% of participants also answered that tools were comfortable and easy to use during testing. This is the result of the design of the device which uses the arm bag to hold the electronic module and the neck girdle to hold the MPU6050.

Keywords: Text neck, accelerometer, gyroscope, MPU6050,goniometer.