

ABSTRACT

Heart and body temperature are two physiological aspects that are vital in maintaining the balance and health of the human body. Changes in heart rate and body temperature can be important indicators of the body's response to environmental changes, physical activity, stress, and various medical conditions. Normal body temperature ranges from 36.5°-37.5° if it exceeds 38.5° it can indicate an unhealthy body condition. Quantitative research method, this test was carried out with 10 different people in the age range 20-35 years connected to ESP8266 microcontroller. This test is carried out during resting conditions and conditions after exercising such as jumping rope. The comparison of sensor test results is using an oximeter. Each person will be tested 10 times in two conditions of rest and after exercise. The results of measuring body temperature in resting conditions show good performance with an accuracy rate of 99.57%, while in conditions after exercise, the measurements also run well and reach an accuracy level of 99.84%. The results of heart rate measurements in resting conditions showed good performance with an accuracy rate of 97.93%, while in conditions after exercise, the measurements also went well and achieved an accuracy rate of 98.98%. Of all the heart rate and body temperature monitoring systems that have an average accuracy of 98.32%, it can be said that the system as a whole is working well. The monitoring tool is connected to the MQTT protocol by adding a library to NodeMCU via the Arduino IDE. For further design research, it can be developed better by using the Arduino Uno microcontroller as a substitute for the ESP8266 microcontroller. Added LCD to display measurement results directly. Can perform QoS calculations so that Jitter, Throughput, Delay, and Packetloss can be determined.

Keyword: *Body Temperature, Beats Per Minute, ESP8266 Microcontroller, Heart, MAX30102 Sensor, MLX90614 Sensor.*