

ABSTRACT

Along with the continued development of technology and advances in the field of electronics and microcontrollers, various tools were created to facilitate human needs, one of which is in the field of sports that are currently quite advanced. The Bleep Test measurement system in athletes is still manually and there is no automatic measurement tool. Therefore, it takes a real-time Bleep Test measurement system in athletes.

In this study, a tool was created that helps know the VO2 Max of an athlete and can know the heart rate, mileage of running and running time. The bleep test is one way to determine the maximum level of oxygen consumption. The design of this tool will be done using NodeMCU as a link between arduino sensors to the internet, pulse sensor as a heart rate measurement, Infrared Proximity as a distance measurement and VO2 Max connected to the firebase and displayed on the website in real time as a test result.

Based on the tests that have been done from this final project, there is a delay in the application, delay or waiting time on the website of 1 second, delay on the tool by 1 second. On the calculation of application error presentation at a distance with an average of 6.42% and calculations on VO2 Max with an average of 2.66% functionally, this application is feasible to implement for athletes.

Keywords: *Bleep Test, VO2 Max, NodeMCU, Infrared Proximity*