

ABSTRACT

The development of technology is very fast nowadays. Technology is not only used in the field of information systems but is also used for sports needs. In sports, technology can be used to help athletes improve performance during training. Fencing is a sport that focuses on skill techniques such as cutting, stabbing, or parrying an opponent's weapon by utilizing hand agility. In fencing, concentration and reflexes are important factors needed by athletes to be able to attack opponents and to avoid opponent attacks. Concentration and reflex exercises are needed by the Indonesian Fencing Association (IKASI) KONI Bandung City athletes to prepare athletes for the regional sports week in 2022.

In this final project, a tool is designed to train athletes' speed and reflexes. The tool is designed using an ultrasonic sensor, a buzzer, and a Light Emitting Diode (LED) lamp. The workings of the designed tool is that the athlete runs towards the sensor which is marked by a buzzer that sounds and the LED lights up, then the athlete waves his hand at the sensor. The placement of the distance between the tools is adjusted to the needs and level of the athlete's ability. NodeMCU is used to send detection results to the server using a WiFi network. The detection results from the ultrasonic sensor will be displayed on the website that has been created. The website that is designed can perform several configurations of tool functions, namely training mode, delay between tools, duration of tool on, distance of tool to detect, and see indicators of the number of connected sensors.

This final project has succeeded in designing a tool and website to train the speed and reflexes of IKASI KONI athletes in Bandung. Testing the durability of the tools carried out includes testing the distance, delay, and error points. Testing the durability of the tool against distance resulted in the tool being able to connect between the client and server with a maximum distance of 20 meters and an average connected time of 27.39. The interval test of the tool produces an average of 14.57s. Testing the error points on the tool produces an average of 0.078. Tests have been carried out on nine KONI Bandung city fencing athletes with two test models. The results of this final project are expected to be able to contribute to the needs of IKASI KONI in the city of Bandung in preparing athletes for the regional sports week in 2022.

Keywords: NodeMCU, Ultrasonic Sensor, Website, HMTL, Reflexes