

ABSTRACT

The rigorous recruitment process for the Indonesian National Police (Polri) includes a number of qualifying tests including mental, physical and intellectual abilities. The Physical Fitness Test involves physical fitness tests such as push-ups and sit-ups to measure the strength, stamina, and fitness of prospective members. A total of 11,531 people have registered as police candidates in 2023. If the Physical Fitness Test is conducted manually and combined with the high number of candidates, it results in a time-consuming and very tiring process, both for the officers supervising and the participants undergoing the test. Therefore, a device is needed that can perform push-up and sit-up tests efficiently and precisely.

A device that uses IMU sensors to detect tilt and movement is the suggested solution. The device will identify sit-ups and push-ups, and a web interface will show the results. The hands and feet of the user doing push-ups and the chest and hands of the user doing sit-ups are equipped with sensors. The tool is intended to speed up the testing process and produce more precise findings, thereby increasing the efficacy and mutual benefit of the police candidate selection process.

“Sensor-based Push-up and Sit-up Counter System” has been tested with various challenges. The system was tested by four participants from Telkom University Taekwondo UKM. The test results show that the system has a functional interface and can count push-ups and sit-ups in real-time. The functionality of Bluetooth connectivity, clear movement scores, audio alerts, and score history are also good. However, the gyroscope takes a while to recover to zero and has problems identifying fast movements.

Keywords: police recruitment, physical fitness test, IMU sensor, motion detection, push-up, sit-up