# ABSTRACT

Health is something that needs to be taken care of, especially physical health. One way to monitor physical health is by conducting monitoring or examination of body composition. Body composition needs to be known in terms of its levels or amounts as a step to maintain health and anticipate diseases. The most effective way to measure body composition is by using a body composition analyzer or body fat monitor independently. However, these tools are still impractical because they cannot measure height automatically and their usage procedures are still relatively complex.

In this research, the author designed a body composition measurement device that can measure weight, height, body fat percentage, body water percentage, and BMI or Body Mass Index. The design of this body composition measurement tool uses a formula that approaches the relationship between foot length and height to obtain the height value, and the Bioelectrical Impedance Analysis method to obtain the percentage of body fat mass. The BIA or Bioelectrical Impedance Analysis method utilizes body impedance values. Body impedance values are obtained by measuring the voltage generated from the process of passing AC current at a certain frequency constantly into the body. In addition to body impedance, variables needed for the BIA method are weight, height, age, and gender.

This research resulted in the design of a body composition measurement device that can measure weight, height, body fat mass percentage, total body water percentage, and BMI or Body Mass Index using the BIA system. The body composition measurement tool in this study has an accuracy level of 92.884% for body fat mass percentage measurement, 94.440% for total body water percentage measurement, and 98.284% for BMI or Body Mass Index measurement.

Keywords: Body composition, Bioelectrical Impedance Analysis, body fat mass.