

RANCANG BANGUN *AUTOMATIC CARDIOPULMONARY RESUSCITATION* DILENGKAPI OKSIGEN SEBAGAI ALAT BANTUAN HIDUP DASAR BERBASIS ARDUINO

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ABSTRAK

Berdasarkan data *World Health Organization* (WHO) tahun 2010, menyebutkan bahwa penyakit henti jantung saat ini menjadi pembunuh nomor satu di negara maju dan berkembang dengan menyumbang 60% dari seluruh kematian. Resusitasi Jantung Paru (RJP) berupaya mengembalikan fungsi napas dan atau sirkulasi yang berhenti oleh berbagai sebab dan dapat membantu memulihkan kembali kedua fungsi jantung dan paru ke keadaan normal. Penelitian ini bertujuan untuk mengembangkan sebuah alat CPR secara otomatis yang memenuhi standar *American Heart Association* (AHA) dan *European Resuscitation Council* (ERC) dengan jumlah kompresi 100-120 kali per menit dan tingkat kedalaman 50-60 mm. Penelitian ini menggunakan metode penelitian *Research And Development* (R&D) dengan tahapan penelitian *Analyze, Design, Development, Implementation, Evaluation* (ADDIE). Dengan hasil dari pengujian alat ini didapatkan tingkat keakurasian tiap pengujian rata-rata 99,96%, dengan tingkat kedalaman 50 mm, jumlah kompresinya 120 kali per menit, berat penekanan kompresi 5,65 kg dan dapat menjangkau ketebalan dada minimal 14,3 cm serta maksimal 27,5 cm. Dari hasil pengujian serta analisa, penulis menyimpulkan bahwa rancangan alat *Automatic Cardiopulmonary Resuscitation* ini memenuhi standar *American Heart Association* dan *European Resuscitation Council*.

Kata Kunci: Henti Jantung, CPR Otomatis, Arduino Uno.

**DESIGN AND DEVELOPMENT OF AUTOMATIC
CARDIOPULMONARY RESUSCITATION EQUIPPED WITH
OXYGEN AS A BASIC LIFE SUPPORT TOOL BASED ON
ARDUINO**

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ABSTRACT

Based on World Health Organization (WHO) data from 2010, cardiac arrest is currently the leading cause of death in developed and developing countries, accounting for 60% of all fatalities. Cardiopulmonary Resuscitation (CPR) aims to restore breathing and/or circulation that has stopped for various reasons and can help return the heart and lung functions to normal. This study aims to develop an automatic CPR device that meets the standards of the American Heart Association (AHA) and the European Resuscitation Council (ERC), with a compression rate of 100-120 times per minute and a depth of 50-60 mm. The research follows the Research and Development (R&D) methodology, using the Analyze, Design, Development, Implementation, and Evaluation (ADDIE) stages. The results from testing this device showed an average accuracy rate of 99.96%, with a compression depth of 50 mm, a compression rate of 120 times per minute, a compression force of 5.65 kg, and the ability to accommodate chest thicknesses ranging from a minimum of 14.3 cm to a maximum of 27.5 cm. Based on the testing and analysis results, the authors conclude that the design of this Automatic Cardiopulmonary Resuscitation device meets the standards of the American Heart Association and the European Resuscitation Council.

Keywords: Cardiac Arrest, Automatic CPR, Aduino Uno.