

A Comprehensive Review of Cardiac Output Determination and Radial Pulse Analysis Using Piezoelectric Sensors

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Cardiovascular conditions are a significant cause of death globally, with millions of deaths annually worldwide. To evaluate cardiovascular conditions effectively, the analysis of the arterial pulse wave can be a convenient approach. Radial pulse waves can give more information on cardiovascular function including blood vessel property changes, respiration alterations, and autonomic nerve access. In recent years, a considerable amount of work has been done on the modernization of the use of pulse diagnosis technology which has utilized the available modern technologies. Pressure sensors are common in the detection of pulsatile changes in arterial pressure. Piezoelectric sensors directly convert the pressure signals (mechanical vibrations) into electrical signals as they are sensitive to pressure. Due to their super performance abilities and compatibility with signal processing methods, piezoelectric sensors are one of the choices for capturing radial pulse signals in research setups. The radial pulse wave is mostly used to determine blood pressure, blood flow, arterial stiffness, heart rate, left ventricular stroke volume, systemic vascular resistance, and vascular compliance. Additionally, different estimators, which are used in arterial pulse analysis, and other approaches like Doppler ultrasonography and radionuclide angiography, estimate cardiac output. This review article explores the advancements in determining cardiac output through Radial pulse using Piezoelectric sensors.

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