

Peripheral Vascular Noninvasive Measurements

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Abstract

Assessment of physiological and pathological parameters of the peripheral vasculature is important for the diagnosis and monitoring of vascular diseases, many of which can evolve into severe or even life-threatening conditions. There is great desire for noninvasive measurement methods as alternatives or adjuncts to available invasive techniques, which often are limited in their use because of patient risk, operating complexity, or cost. The first part of the article gives a broad overview of existing noninvasive techniques for the evaluation of vascular parameters such as pressure, flow, and compliance. For each method, a general introduction is given followed by the theoretical framework of signal generation and device implementation. This is complemented by descriptions of signal analysis and clinical applications. The second part of the article briefly reviews of how

available imaging-based methods relate to the evaluation of the vasculature, including a number of advanced techniques that are presently in development or are undergoing clinical or preclinical trials.

Citing Literature



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