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Abstract
Pulse wave velocity (PWV) is one of many parameters, which is used to evaluate arteriosclerosis recently. Therefore, the goal of the study is to design an extremities-PWV evaluation system. The PWV is calculated by pulse characteristic-points search and first heart-sound location. It observes that the differences and relationships among the PWV. Because non-invasive arteriosclerosis evaluation by PWV is based on all pulse velocities are equal, it makes some unreasonable results. The proposal method in the study provides more careful evaluation of PWV, and compares the relationship between calculated two PWVs from heart-extremities and finger-toe respectively. It can provide the clinician reference, which makes arteriosclerosis evaluation.
The user interface includes two components: signal-acquisition function and analytic-data function. The signal-acquisition function, which is designed by Visual Basic program language, can draw the multi-channel signals on the graphic interface and real-time calculate extremities-PWV. The analytic-data function, which is designed by Matlab program language, can beat-by-beat calculates physiological information conveniently. The system uses long-term electrocardiogram, heart sound and photoplethysmography simultaneous record, not only can provide more precise value but also can evaluate more complete PWV.
Keyword: PWV, arterial stiffness, phonocardiogram
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