

This is additional metadata of the following published document, For Nature Research published material that has been archived into academic repositories such as institutional repositories, PubMed Central and its mirror sites, where Nature Research holds copyright, or an exclusive license to publish, users may view, print, copy, download and text and data-mine the content, for the purposes of academic research, subject always to the full conditions of use. Conditions of use Articles published by Nature Research which are made available through academic repositories remain subject to copyright. Any reuse is subject to permission from Nature Research. The following restrictions on re-use of such articles apply: Academic research only 1. Archived content may only be used for academic research. Any content downloaded for text based experiments should be destroyed when the experiment is complete. Re-use must not be for Commercial Purposes 2. Archived content may not be used for purposes that are intended for or directed towards commercial advantage or monetary compensation by means of sale, resale, licence, loan, transfer or any other form of commercial exploitation ("Commercial Purposes"). Wholesale re-publishing is prohibited 3. Archived content may not be published verbatim in whole or in part, whether or not this is done for Commercial Purposes, either in print or online. 4. This restriction does not apply to reproducing normal quotations with an appropriate citation. In the case of text-mining, individual words, concepts and quotes up to 100 words per matching sentence may be reused, whereas longer paragraphs of text and images cannot (without specific permission from Nature Research. Moral rights 5. All re-use must be fully attributed. Attribution must take the form of a link - using the article DOI - to the published article on the journal's website. 6. All re-use must ensure that the authors' moral right to the integrity of their work is not compromised. Third party content 7. Where content in the document is identified as belonging to a third party, it is the obligation of the user to ensure that any reuse complies with copyright policies of the owner. Re-use at own risk 8. Any re-use of Nature Research content is at your own risk and Nature Research accepts no liability arising from such re-use. and is licensed under All Rights Reserved license:

Stoner, Lee, Stone, Keeron J, Hanson, Erik D, Faulkner, James, Fryer, Simon M and Credeur, Daniel (2018) Reliability of Pulse Waveform Separation Analysis Responses to an Orthostatic Challenge. Hypertension Research, 41 (3). pp. 176-182. ISSN 0916-9636

DOI: <http://dx.doi.org/10.1038/s41440-017-0005-1>
EPrint URI: <http://eprints.glos.ac.uk/id/eprint/4828>

Disclaimer

The University of Gloucestershire has obtained warranties from all depositors as to their title in the material deposited and as to their right to deposit such material.

The University of Gloucestershire makes no representation or warranties of commercial utility, title, or fitness for a particular purpose or any other warranty, express or implied in respect of any material deposited.

The University of Gloucestershire makes no representation that the use of the materials will not infringe any patent, copyright, trademark or other property or proprietary rights.

The University of Gloucestershire accepts no liability for any infringement of intellectual property rights in any material deposited but will remove such material from public view pending investigation in the event of an allegation of any such infringement.

PLEASE SCROLL DOWN FOR TEXT.

Cardiovascular autonomic nervous system function can be assessed by using an orthostatic challenge to induce arterial wave reflection. While arterial reflection is typically estimated using central augmentation index, a superior estimation can be obtained using pulse wave separation analysis to estimate the aortic backward pressure wave (Pb). However, to be of value in a clinical or research setting, an assessment tool must be precise (reliable). Therefore, this study sought to determine the measurement precision of Pb responses to a modified tilt-table test. Twenty healthy adults (26.4 y (SD 5.2), 24.7 kg/m² (SD 3.8), 55% Female) were tested on three different mornings in a fasted state, separated by a maximum of seven days. Pressure waveforms were recorded on the left arm, and aortic waveforms were generated using a generalized transfer function. Subsequently, a physiologic flow waveform was assumed to separate the aortic pressure wave into its *forward* and timing-independent *backward* (Pb) components. The criterion intra-class correlation coefficient of ≥ 0.75 was exceeded at baseline (0.79), following 5 min tilt (0.75), and following 5 min recovery from tilt (0.75). The standard error of measurement was 7%. These findings indicate that, in a healthy cohort, the Pb response to an orthostatic challenge can be assessed with acceptable precision. The next step is to determine the sensitivity (validity) of this technique in identifying cardiovascular autonomic dysfunction in patient groups.