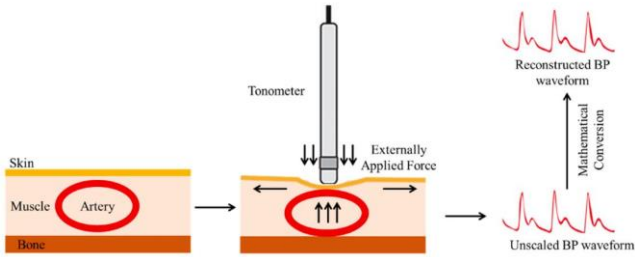


APPLANATION TONOMETRY

<p>What is it?</p>	<p>Applanation tonometry is a noninvasive sensor-based technique that can be used to measure the arterial blood pressure pulse wave [Drzewiecki 1983]. A pulse wave signal can be acquired using this approach by using a probe to flatten (i.e. slightly compress) a superficial artery so that the pressure exerted on the probe is equivalent to the arterial pressure [Salvi 2015, Athaya 2022]. An arterial pulse wave is then obtained by using a strain gauge sensor to measure the small displacements of the probe due to arterial pulsations [Salvi 2016].</p>
<p>Why do we measure it?</p>	<p>In the vascular ageing field this technique is used for [Laurent 2006, Nichols 2022]:</p> <ul style="list-style-type: none"> • Central blood pressure estimation and local pressure assessment. • Pressure Waveform Analysis. • Pulse Wave Velocity assessment.
<p>How can it be measured</p>	<p>The sensor is placed on the skin, over the arterial site of interest.</p> <p>Applanation tonometry can be performed either at a single arterial site (e.g., for local pressure pulse wave assessment), or at two different sites (e.g., for Pulse Wave Velocity measurement). When using two sites, two simultaneous tonometry signals can be acquired using two tonometer sensors, or ECG signal gating can be used to time-align tonometry signals obtained sequentially with a single tonometer sensor.</p> <p>Depending on the type of algorithm used to process the acquired signals, approximately twenty sequential waveforms covering at least one complete respiratory cycle are required to generate a reliable input to further analysis.</p> <p>Since applanation tonometry does not measure absolute pressure values, the pressure wave is typically calibrated using independent brachial cuff BP measurements, based on the assumption that mean and diastolic pressures remain constant along the arterial tree [Salvi 2015].</p>
<p>Where is it measured?</p>	<p>Superficial sites, like radial, femoral and carotid arteries. It is helpful if the chosen site has a bone beneath the artery to properly flatten the vessel [Athaya 2022].</p>

<p>Figure</p>	<p>Figure from a publication:</p>  <p>Noninvasive blood pressure waveform estimation using the arterial tonometry method. <i>Source: Athaya 2022, reproduced under CC BY 4.0 .</i></p> <p><i>Athaya, T. et al. 2022. Review of Noninvasive Methodologies to Estimate the Blood Pressure Waveform. DOI: 10.3390/s22103953. Figure 2.</i></p>
<p>References</p>	<p>Drzewiecki et al. 1983. DOI: 10.1016/0021-9290(83)90037-4 Laurent et al. 2006. DOI: 10.1093/eurheartj/ehl254 Salvi et al. 2015. DOI: 10.1038/hr.2015.78 Athaya et al. 2022. DOI: 10.3390/s22103953 Nichols et al. 2022. DOI: 10.1201/9781351253765 Salvi et al. 2016. DOI: 10.1007/978-3-319-40501-8</p>

FEEDBACK AND SUGGESTIONS FOR THESE DEFINITIONS* CAN BE SUBMITTED AT

<https://vascagenet.eu/feedback-for-official-glossary-of-key-terms>

* These definitions have been downloaded from <https://vascagenet.eu/official-glossary> and were released on 1st April, 2023.