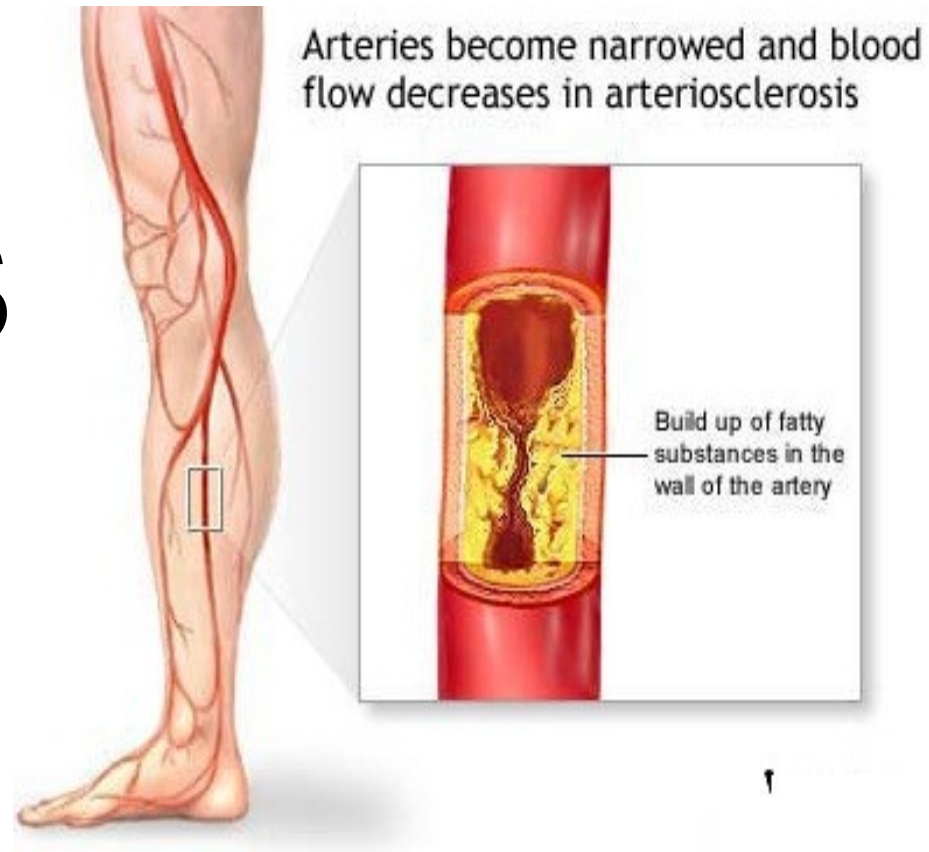


# ABI-mittaus

Jyri Toikka  
KFI erikoislääkäri  
Dosentti  
Toikka Healthcare Oy

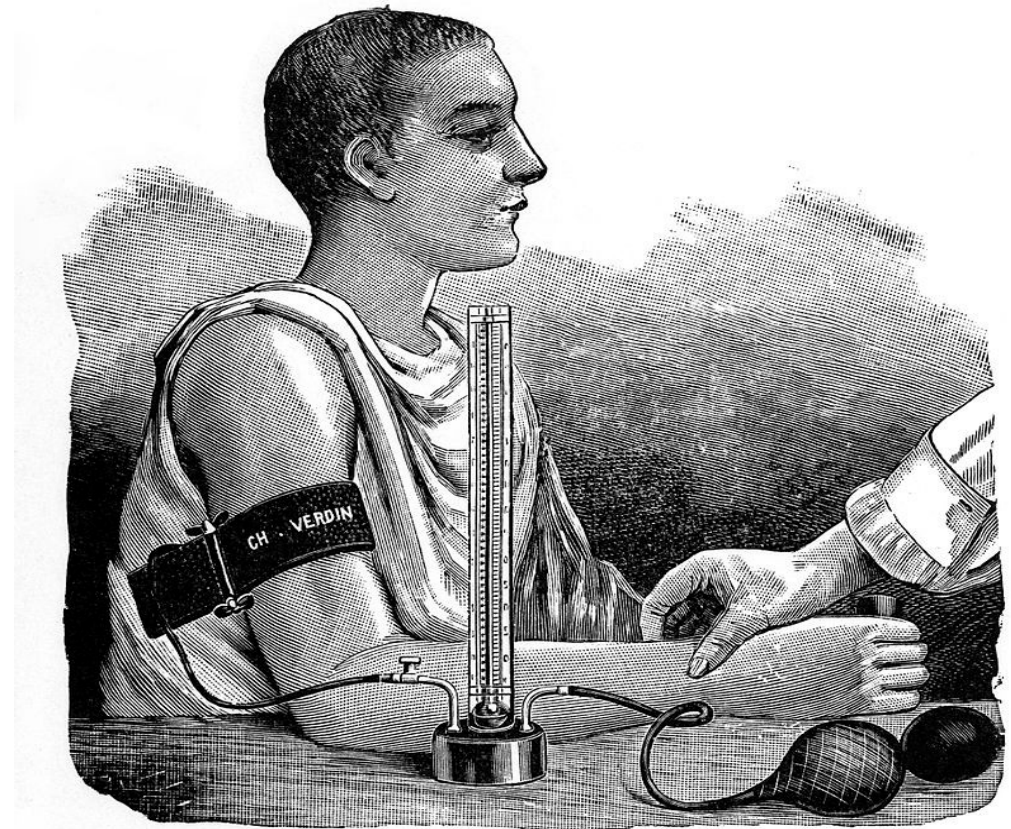


# Verenpaineen mittaus

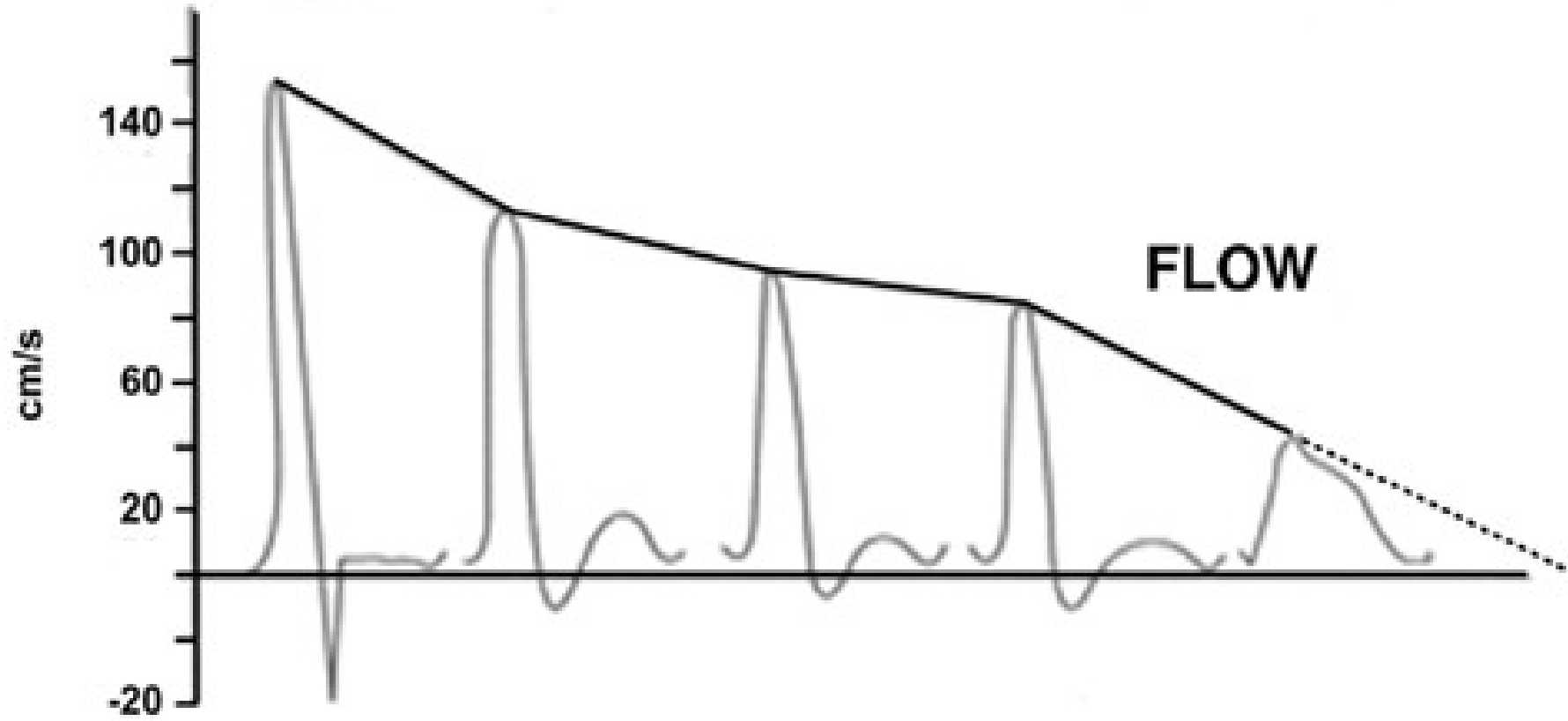
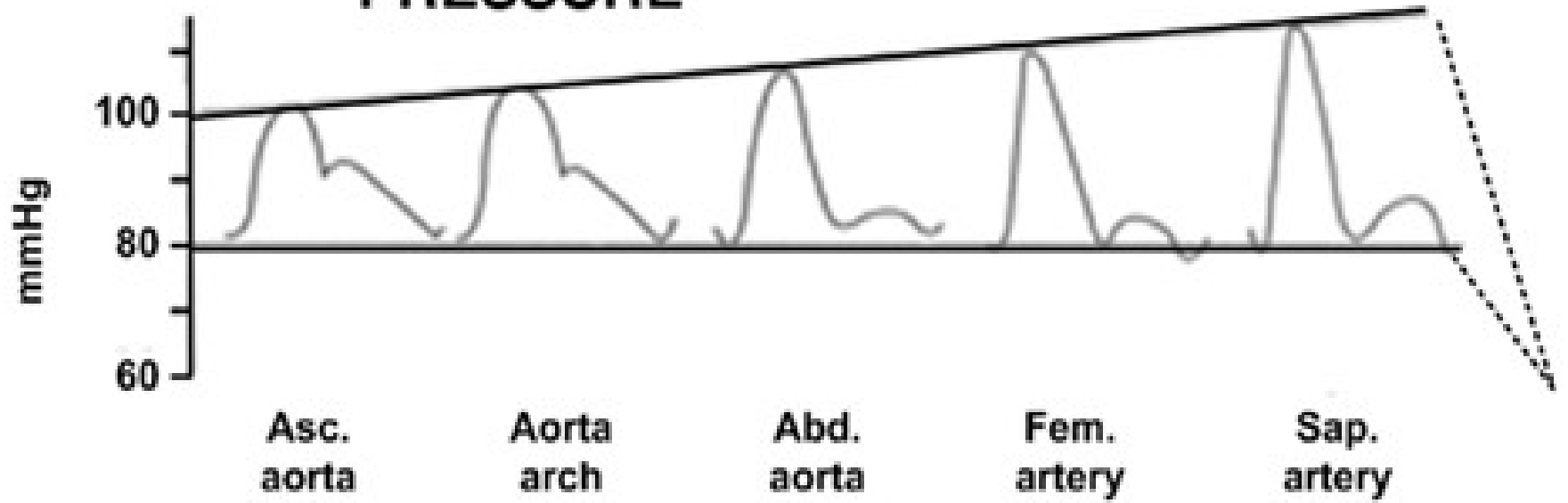
- Scipione Riva-Rocci = RR
- 7.8.1863-15.3.1937



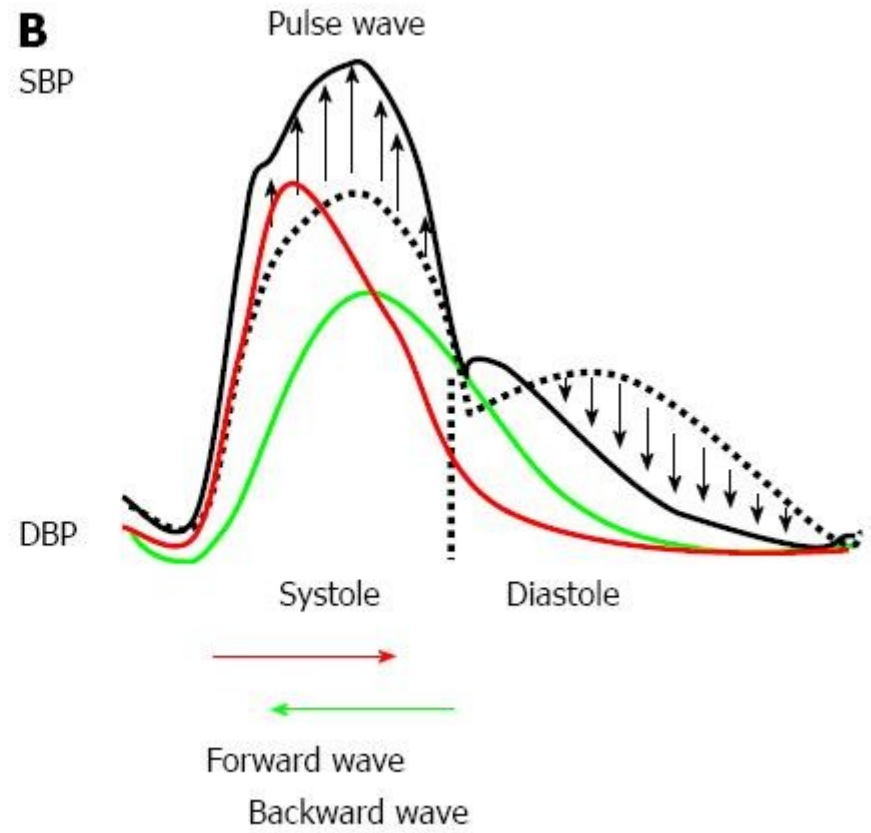
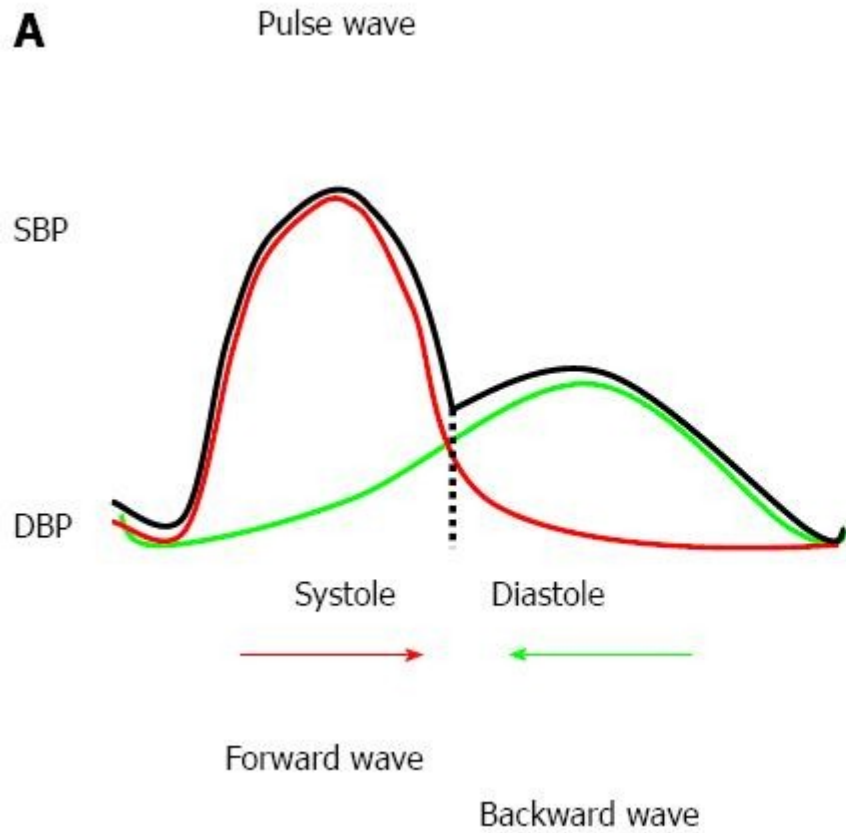
- Gazzetta Medica  
di Torino 1896



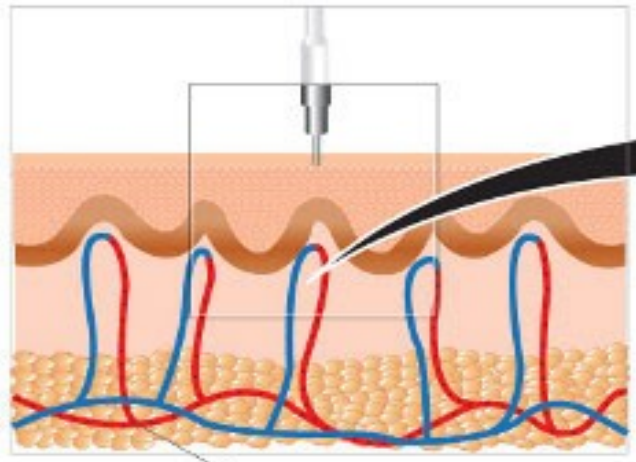
# PRESSURE



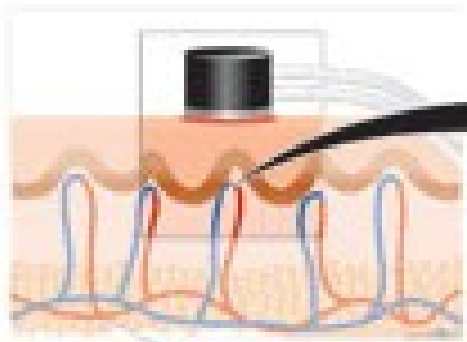
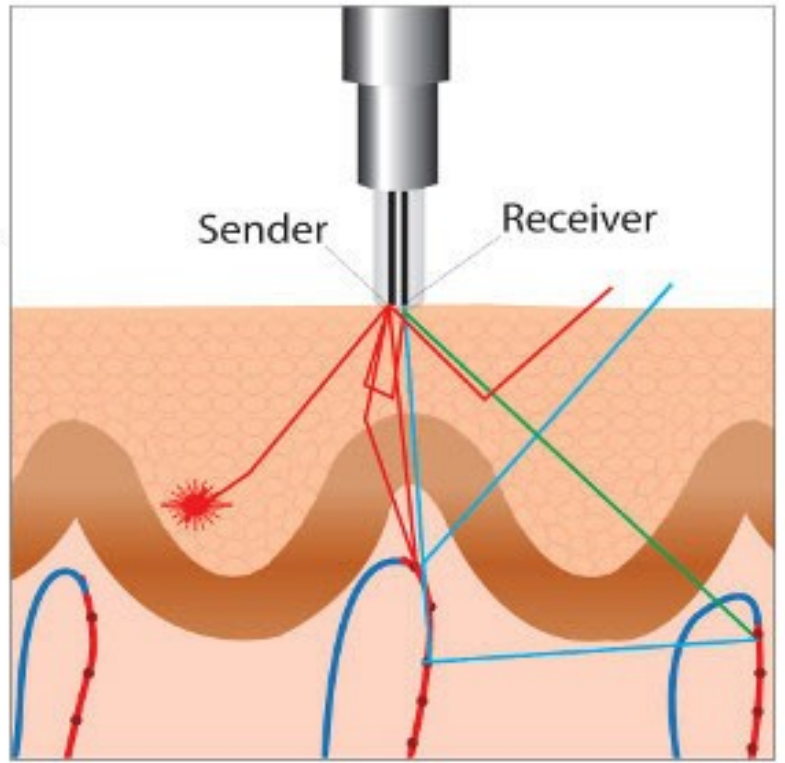
# FLOW



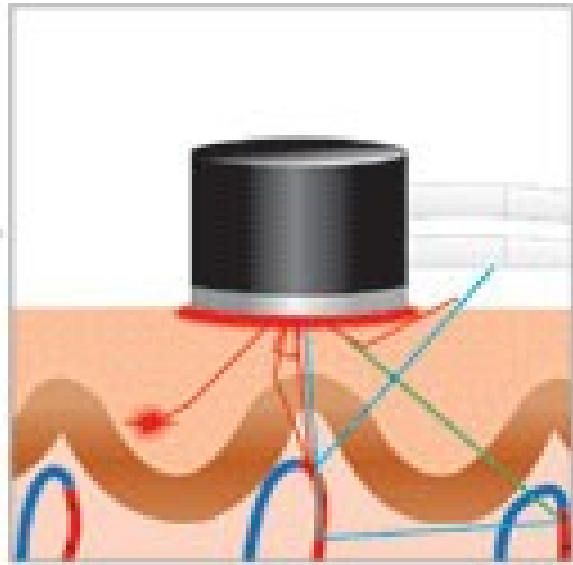




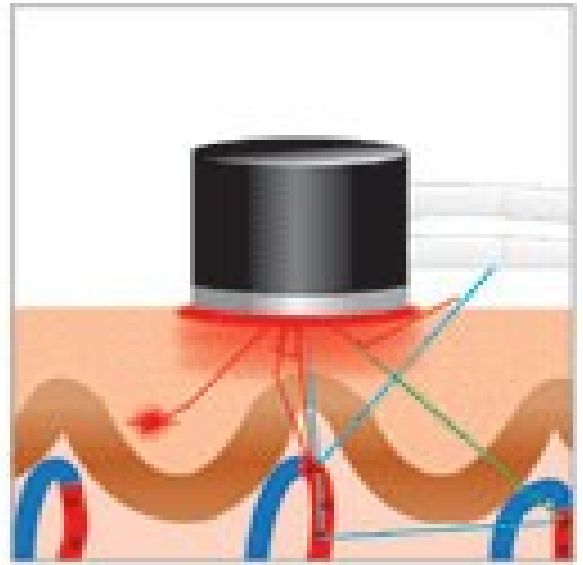
Capillaries



Capillaries



1



2



# The usefulness of a laser Doppler in the measurement of toe blood pressures

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**Objective:** The purpose of this study was to evaluate the clinical value and reproducibility of laser Doppler (LD) versus photoplethysmography (PPG) in the measurement of the systolic toe blood pressure.

**Methods:** Toe blood pressure was measured in 60 patients in different stages of peripheral vascular disease with simultaneous digital sampling of PPG and two LD signals, each with a different filter setting (3 second [LD<sub>3</sub>] and 0.03 second [LD<sub>0.03</sub>]), and cuff pressure. These measurements were repeated after 1 week. The signals were analyzed with previous results ignored. The agreement of the PPG and LD pressures and reproducibility after 1 week were assessed by calculating the intraclass correlation coefficient (ICC). The agreement variation across the range of pressure values was visually explored by means of difference plots.

**Results:** In 19 legs with a very low pressure only LD could adequately measure the pressure, whereas PPG did not. The ICCs between PPG and LD<sub>3</sub> and LD<sub>0.03</sub> were 0.95 or more. The ICCs of the 1-week reproducibility of the PPG, LD<sub>3</sub>, and LD<sub>0.03</sub> pressures were 0.92, 0.88, and 0.86, respectively. The variation was equally distributed across the

19 vaikeaa jalkaa saatiin mitattua vain laser Doppler -menetelmällä



# Menetelmästä

Toistettavuus: Toistettujen mittausten keskimääräinen virhe 8-9%. Melko luotettava.

Cuffin koko. Liian pieni cuffi – liian iso arvo! Lähinnä olkavarren mittaukseen vaikuttaa.

Nilkkacuffi malleolien yläpuolelle.

Olkavarren paine, korkeampi vertailuun, ero saattaa viitata ahtaumaan yläraajan verenkierrassa

# ABI gradeeraus

- Normaali 0.9 – 1.3
- Lievä alenema 0.7 – 0.9
- Kohtalainen 0.4 – 0.7
- Vaikea < 0.4
- 
- Paikkakuntakohtaista vaihtelua

<b>ABI Value</b>	<b>Interpretation</b>	<b>Recommendation</b>
<b>Greater than 1.4</b>	<b>Calcification / Vessel Hardening</b>	<b>Refer to vascular specialist</b>
<b>1.0 - 1.4</b>	<b>Normal</b>	<b>None</b>
<b>0.9 - 1.0</b>	<b>Acceptable</b>	
<b>0.8 - 0.9</b>	<b>Some Arterial Disease</b>	<b>Treat risk factors</b>
<b>0.5 - 0.8</b>	<b>Moderate Arterial Disease</b>	<b>Refer to vascular specialist</b>
<b>Less than 0.5</b>	<b>Severe Arterial Disease</b>	<b>Refer to vascular specialist</b>

# Kriittinen iskemia

Subcritical ischemia ABI < 0.5

Kriittinen iskemia ABI < 0.3 (tai < 40 mmHg)

European Consensus Document:

Kriittinen - nilkka < 50 mmHg, varvas < 30 mmHg

Toe pressure - Matala PPV, korkea NPV

# Ei tulosta, pahus

- Diabeetikoilla ongelma
- Suonet jäykistyneet ja ei mene kiinni.
- Täytyy tyytyä varvaspaineeseen

many vascular specialists. TSP are very useful when ABIs are incompressible [16]. TSP of  $<30$  mmHg suggests severe ischaemia [22]. In patients with diabetes, a higher pressure may be required for ulcer healing, and it has been suggested that  $TSP \geq 55$  mmHg predicts a high likelihood of healing in a patient with a DFU [16].

# Transcutaneous O<sub>2</sub> measurement



# Hoidot (lyhyesti)

- Pallolaajennus
- Ohitusleikkaus