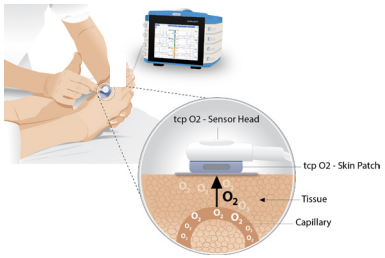
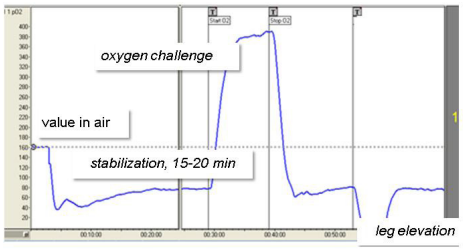
PeriFlux 6000 tc*p*O_2 Transcutaneous Oxygen *in theory*

I. What is tc*p*O_2?

Transcutaneous oxygen, tc*p*O_2 or TCOM, is a local non-invasive measurement reflecting the amount of O_2 that has diffused from the capillaries, through the epidermis, to a Clark-type electrode at the measuring site. It provides instant continuous information about the body's ability to deliver oxygen to the tissue.





Typical tcpO_2 curve.

II. Why measure tc*p*O_2?

Transcutaneous oxygen measurement is a well-documented technique routinely used by clinicians for wound healing prediction, screening for vascular disease, assessing the success of revascularization, predicting amputation level, and qualification for hyperbaric oxygen therapy.

III. Reference values

50-70 mmHg	Normal
< 40 mmHg	Impaired wound healing
< 30 mmHg	Critical Limb Ischemia

IV. Influencing factors

A low tc*p*O_2 value can be influenced by several factors:

- Peripheral Arterial Disease (PAD)
- Capillary impairment
- Cardiopulmonary disease
- Edema
- High consumption of O_2 due to infection/inflammation

V. Interpreting results

Oxygen challenge (tc*p*O_2 measurement during 100% oxygen inhalation), will distinguish low values due to a barrier to oxygen diffusion (edema and/or inflammation) from macrovascular disease (PAD). It can also determine candidates for HBO (Hyperbaric Oxygen) treatment.

Normal values: > 100 mmHg and/or > 100% increase from baseline.

Leg elevation for a duration of 5-15 minutes may be used to confirm macrovascular disease.

Normal values: Drop < 10 mmHg and/or < 20% from baseline.

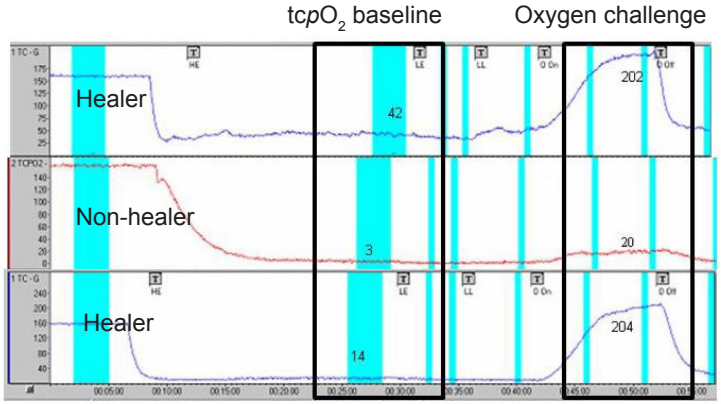
Other methods to confirm macrovascular disease include toe and ankle pressure.

Reference electrode or oxygen saturation (pulse oximeter) will rule out arterial hypoxemia (due to pulmonary disease, for example).

A mean of several tc*p*O_2 values is a better predictor of wound healing potential than a single site value.

To predict **benefit from HBO** (Hyperbaric Oxygen) treatment.

Transcutaneous Oximetry in Clincal Pratice: Consensus statements from an expert panel based on evidence. Fife, Smart, Sheffield, Hopf, Hawkins and Clarke. UHM 2009, Vol. 36, No. 1.



Baseline and oxygen challenge values for three different patients with a wound. Patients with a wound which healed show a clear increase in mmHg during the oxygen inhalation. One of the healers had a baseline tcpO_2 value above the threshold value of 40 mmHg, and one below. The latter case stresses the importance of using provocations to distinguish low values as a consequence of an inflammatory process, from macrovascular disease.

PERIMED

PERIPHERAL VASCULAR
DIAGNOSIS MADE INTELLIGENT

PeriFlux 6000 tcpO_2 *Practically*

I. Let the patient rest in supine position

Keep feet and toes warm.

II. Start instrument and calibrate electrodes

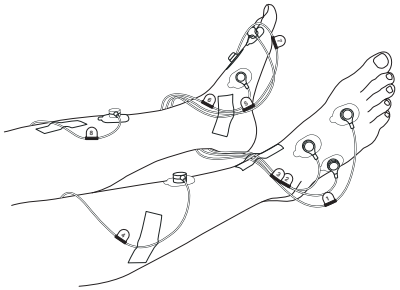
Power up at the rear panel.
Allow the instrument 5 minutes to warm up.
Calibrate electrodes by tapping *CAL*.

III. Enter patient details

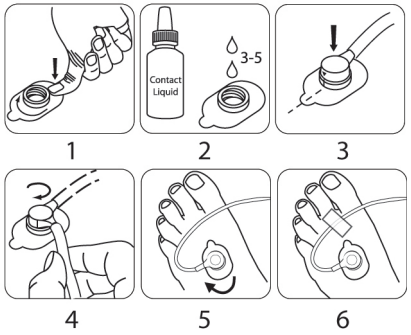
Tap the *Patients* tab. Select an existing patient or create a new entry. Tap the *Clinical Info* icon to enter patient medical history.

IV. Attach fixation rings

Remove body hair, blot with medical tape and wipe site with alcohol. Avoid bony prominences, areas of edema, large superficial vessels, callused skin, plantar surface of the foot and infected or inflamed areas close to the wound.



TC 550 Fixation Ring or
TC 555 Fixation Ring Extra Strength Adhesive



V. Document electrode positions

Take a photo. Connect camera to USB port (rear panel).
Tap the *Sites* tab. Tap the *Camera* icon and select photo.
If you do not want to use a camera, tap the *Image* icon and select suitable illustration.

Indicate the sites by tapping and dragging the corresponding *Handle* icon over the site of each electrode. Name channels. Make sure color coding is correct.

VI. Start measurement, follow instructions

Tap the *Start* icon. Select appropriate test.
At least 15 minutes for stable baseline.
Perform provocations if necessary - leg elevation/O_2 inhalation.

VII. Print or export report as PDF-file

Export directly to a USB device or via PeriFlux Configuration Software (PCS).

Calibration

Calibration ensures accurate measurements and should be performed:

- prior to each measurement period
- when changing measuring sites
- every four hours
- every time an electrode has been remembraned (calibrate twice)

Cleaning and Maintenance of Electrode

Gently wipe the electrode and cable with a soft cloth or tissue moistened with water.

Use clean tissues to remove any remaining moisture. The following water-based disinfection solutions are recommended: MadaCide-FD (MADA Inc.), Control III (Maril Products Inc.), Sekusept Plus (Ecolab).

Note! Avoid exposing the electrode cable to any product (hand lotion or disinfection solution, for example) based on isopropanol/propyl alcohol/alcohol as frequent exposure to these products may damage the electrode cable.

To obtain reliable measurements, electrode remembraning is recommended every week.

Please refer to the instrument manual for complete instructions on cleaning and maintenance

For detailed instructions, please refer to the Operator's manual.

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