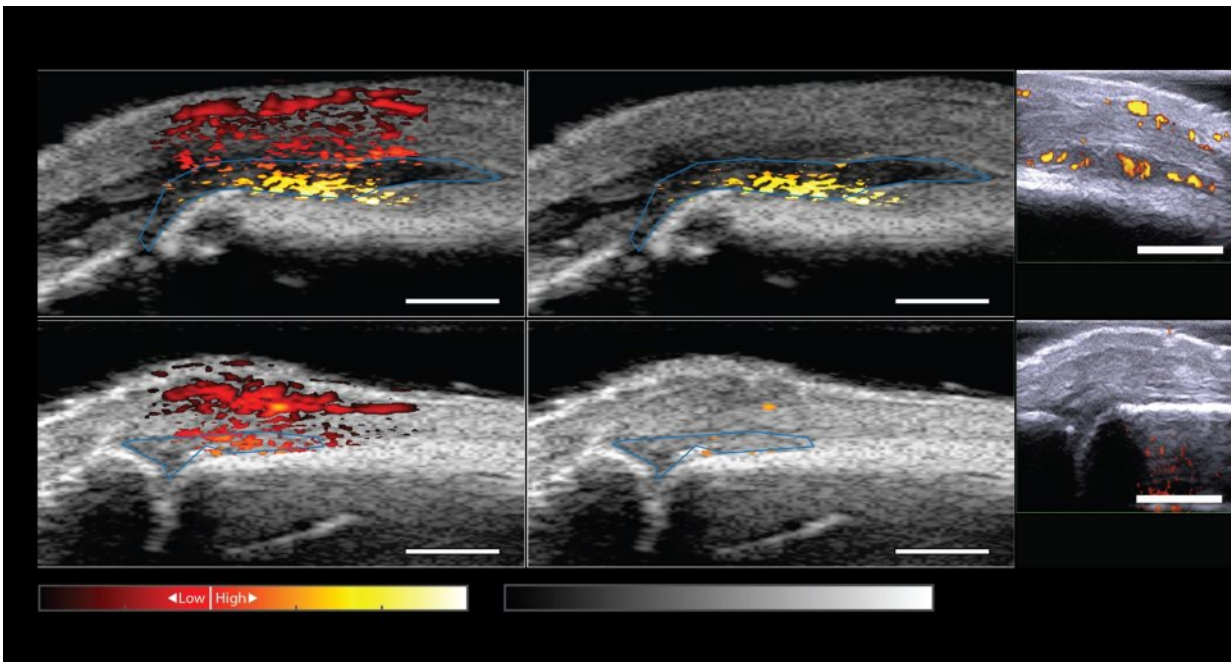


# Prototype equipment can detect rheumatoid arthritis

September 28 2017



Credit: University of Twente

According to a first clinical study published in the scientific journal *Photoacoustics*, the University of Twente and various European partners have designed a device that shows the difference between healthy fingers and arthritic fingers. The University of Twente and Ziekenhuis Groep Twente researchers responsible for the development of the compact device believe that it may in time help doctors to objectively

diagnose the degree of inflammation in joints.

Several years ago, researchers from the University of Twente joined forces with a number of companies to develop a prototype for a machine that would combine [ultrasound](#) and photoacoustics medical imaging techniques. Combining these techniques allows specialists to create images of superficial areas of the body that can offer doctors a wealth of useful information. The idea behind the [device](#) was to eventually use it to diagnose arthritis and determine the severity of burns, skin cancer and hardening of the arteries.

## Clinical study

In the first clinical study, the researchers demonstrate that the device is able to clearly show the difference between arthritic and healthy joints. Researcher Pim van den Berg explains: "The signal we measured in arthritic fingers was four to ten times stronger than in healthy fingers." Mr Van den Berg says this means the device is able to work at least as well as [ultrasound technology](#).

Seventeen test subjects participated in the study and researchers were able to successfully demonstrate that this device can in fact be used to diagnose inflamed joints. The researchers expect that the device may also be used in future to determine the degree of inflammation, which they hope to be able to show after a number of improvements have been made that are currently in the pipeline. Diagnoses become more objective because patients no longer have to depend solely on human observation.

Ultrasound technology and photoacoustics are two medical imaging techniques that complement each other well. Where ultrasound offers images of structures, photoacoustics generates images that contain more functional information, such as where blood is located.

In photoacoustics, short [laser pulses](#) are emitted into a patient's body. When these laser pulses hit a blood vessel, for example, they cause a small increase in pressure that moves through the body like a sound wave and can be measured on the skin. In ultrasound imaging, the sound is transmitted into the body, where it bounces off of various tissues in a variety of ways and produces waves that can also be detected on the skin.

**More information:** Pim J. van den Berg et al. Feasibility of photoacoustic/ultrasound imaging of synovitis in finger joints using a point-of-care system, *Photoacoustics* (2017). [DOI: 10.1016/j.pacs.2017.08.002](#)

Provided by University of Twente

Citation: Prototype equipment can detect rheumatoid arthritis (2017, September 28) retrieved 19 November 2023 from

<https://medicalxpress.com/news/2017-09-prototype-equipment-rheumatoid-arthritis.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--