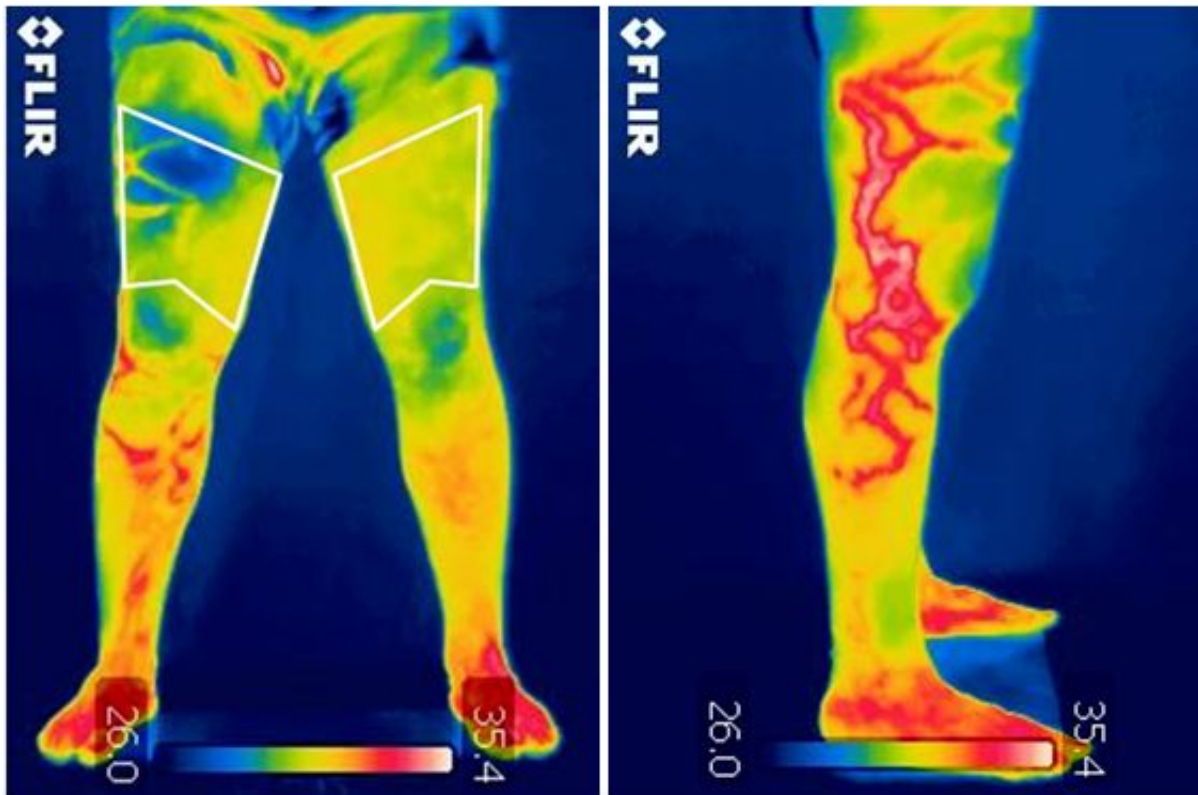


# Infrared thermography, a support tool for orthopedic diagnosis

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Left: Data collection of the injured and uninjured regions of interest (right quadriceps with moderate muscle strain). Right: Lateral picture of the same person in which we see a possible vascular problem, this provide additional information that would be impossible to perceive at first glance. Credit: Research group of TermoINEF

A research group at Universidad Politécnica de Madrid (UPM) in

collaboration with Clínica CEMTRO has carried out a study to establish the capacity of infrared thermography (IRT) to discriminate injuries and to evaluate its applicability in emergency trauma scenarios. Results show that this technology is a great support tool to correctly identify the presence o absence of injuries in a particular body part.

Today, there are sufficient methods for reliable diagnosis of [orthopedic injuries](#): X-rays and scanners for bone injuries, ultrasound scans for [muscle injuries](#) and MRIs for meniscus and ligament injuries. However, thermography allows a more reliable, faster and lower-cost detection of these injuries based on the measurement of [skin temperature](#) at different body parts. Infrared photography provides images in which every color represents a different [temperature](#). Thus, considering that skin temperatures of contralateral regions are symmetrically distributed in a healthy person, a thermal asymmetry in different areas can help detect or even prevent some type of injury.

The research developed by researchers of TermoINEF group at UPM was carried out with patients of the Emergency Unit of Clínica CEMTRO. Results show significant differences of skin temperatures among regions of interest injured and uninjured, for both average temperature values and maximum values.

These values are distributed according to the injured region of interest, the type of injury, the diagnosis and the progress of the injury and they show that skin temperature has a good specificity for the detection of temperature asymmetries in areas injured, and therefore this method can be considered as a reference to make decisions on the existence of an orthopedic injury.

This research has also assessed the influence of the use of ice and anti-inflammatory drugs taking into account some of the cases excluded of the general study in order to conduct a specific analysis of the effects of

anti-inflammatory remedies.

Results show that, when using a high resolution thermographic camera following an appropriate protocol, the [infrared thermography](#) is a suitable support tool to provide practitioners with additional data to correctly identify the presence or absence of an [injury](#). These results have been recently published in the Journal of Medical Imaging and Health Informatics.

**More information:** Manuel Sillero-Quintana et al. Infrared Thermography as a Support Tool for Screening and Early Diagnosis in Emergencies, *Journal of Medical Imaging and Health Informatics* (2015). [DOI: 10.1166/jmihi.2015.1511](https://doi.org/10.1166/jmihi.2015.1511)

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