

# Nd:YAG Telangiectasias Treatment with Skin Temperature Control

Nada Kecelj Leskovec

*Dermatology Internal Centre, DIC Kecelj d.o.o., Domžale, Slovenia*

## SUMMARY

Many undesired side effects can occur after laser treatment if working parameters are set incorrectly. Common procedures recommend setting energy output at a lower level at the beginning of the therapy and gradually increasing it until optimal treatment results are achieved. Such procedures, however, are time consuming and the resulting laser therapy is not optimal.

Various working parameters can be set for telangiectasias treatments with the Nd:YAG laser system (SP Dynamis, Fotona,  $\lambda = 1064$  nm), keeping in mind that the rise of skin temperature should be as short as possible, yet still long enough to destroy the target (the vein) [1].

Non-contact methods based on thermal imaging with an infrared camera are used to monitor the effects of laser therapy, but such control systems have not yet been used in a clinical practice.

The purpose of this study, as a part of iLUMEN research project, was to develop a protocol for an automated warning method for excessive or insufficient tissue irradiation. Based on real-time skin temperature measurement, we developed a prototype control system that was integrated into the laser system (Fig. 1). The study was described in detail in a recent article in the LA&HA Journal [2].

The next step would be to upgrade the control system by implementing an automated warning algorithm for excessive tissue irradiation.

Using the upgraded control system, we expect further improvements with various laser based treatments.

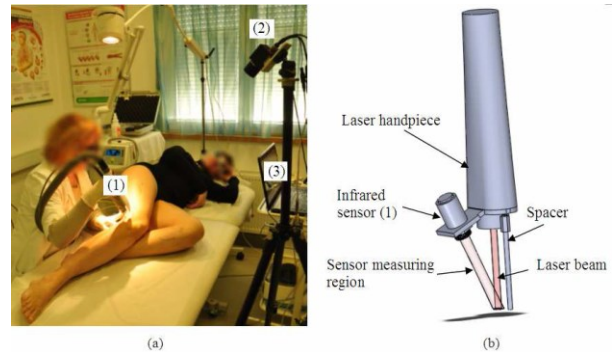


Figure 1a: Experimental setup during laser therapy; (1) – laser head with mounted infrared sensor, (2) – infrared camera, (3) – data acquisition and processing. Figure 1b: 3D model of laser handle with mounted infrared sensor.

## REFERENCES:

1. Sadick N, Sorhaindo L. Laser treatment of telangiectasias and reticular veins. In: Bergan JJ. The vein book. Elsevier; 2007; 157-166.
2. Kneebone J.W., Thermal Imaging Guided Laser Therapy–Part 2, An Innovative Method for Determining Optimal Treatment Location and Effectiveness, Practical PAIN MANAGEMENT, 2009.
3. Nada Kecelj Leskovec, Katarina Bevec, Klemen Povšič MJ (2012), Control system for laser therapy of teleangiectasias. LA&HA - Journal of the Laser and Health Academy 1: 41–45.

The intent of this Laser and Health Academy publication is to facilitate an exchange of information on the views, research results, and clinical experiences within the medical laser community. The contents of this publication are the sole responsibility of the authors and may not in any circumstances be regarded as official product information by medical equipment manufacturers. When in doubt, please check with the manufacturers about whether a specific product or application has been approved or cleared to be marketed and sold in your country.